THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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THE IRON AGE

New York, Thursday, February 2, 1905.

The Wagner Cold Saws.

Two new types of circular saws for cutting cold metals have recently been designed at the works of Gustave Wagner, Reutlingen, Germany. Their construction and working are radically different from anything to be found in this country. In each of them the shaft of the circular saw blade revolves in a swiveling head carried on the end of a sliding support which is square in section and is traveled axially to feed the saw. The swiveling head may be fixed at any angle by a binding screw, the setting being assisted by a graduated circle.

The drive of the saw is obtained from a spindle within the square supporting member, which carries a tempered steel worm, engaging a worm wheel keyed on the saw shaft. The spindle at the driven end is provided with a tight and a loose pulley and an eccentric which drives the feeding mechanism. The eccentric actuates a rocker arm carrying a pawl which revolves a ratchet wheel keyed to a feed spindle. The latter extends through a tail projecting vertically from the rear end of the square supporting member and ends in a screw within a fixed pedestal bearing on the frame. As the feed spindle revolves the saw is fed forward against the work. The screw works in a long nut on the upper face of which a rack is cut, and above the nut is a small pinion engaging the rack on the nut. This pinion is secured to a lever carrying a counterpoise and holds the nut yieldingly against the forward end of its housing. When the pressure against the saw blade increases, due to its encountering a harder or a larger section in the work, the nut yields more or less and retards the feed, simultaneously raising the counterpoise. As soon as the work becomes lighter the descending of the weight makes up for the loss in the feed. As a result of this action every one of the teeth of the saw performs the same amount of work, even when the blade is not quite circular or is out of center. It also avoids the breaking of the blade when it is overworked, as the device is self acting. When a cutting job is completed the feed is stopped altogether by the throwing aside of the pawl.

The blade can be fitted on either end of the saw shaft to cut at angles either side of the vertical. The saw shaft revolves in adjustable copper bearings. The worm wheel is of phosphor bronze and revolves in an oil bath. The saw blade is lubricated and cooled by dipping in a basin of soap suds in the base of the machine. The small type of the machine, shown in Fig. 2, is built with a vise, and the larger one, Fig. 1, with a sliding table, allowing the use of a milling cutter for machining surfaces.

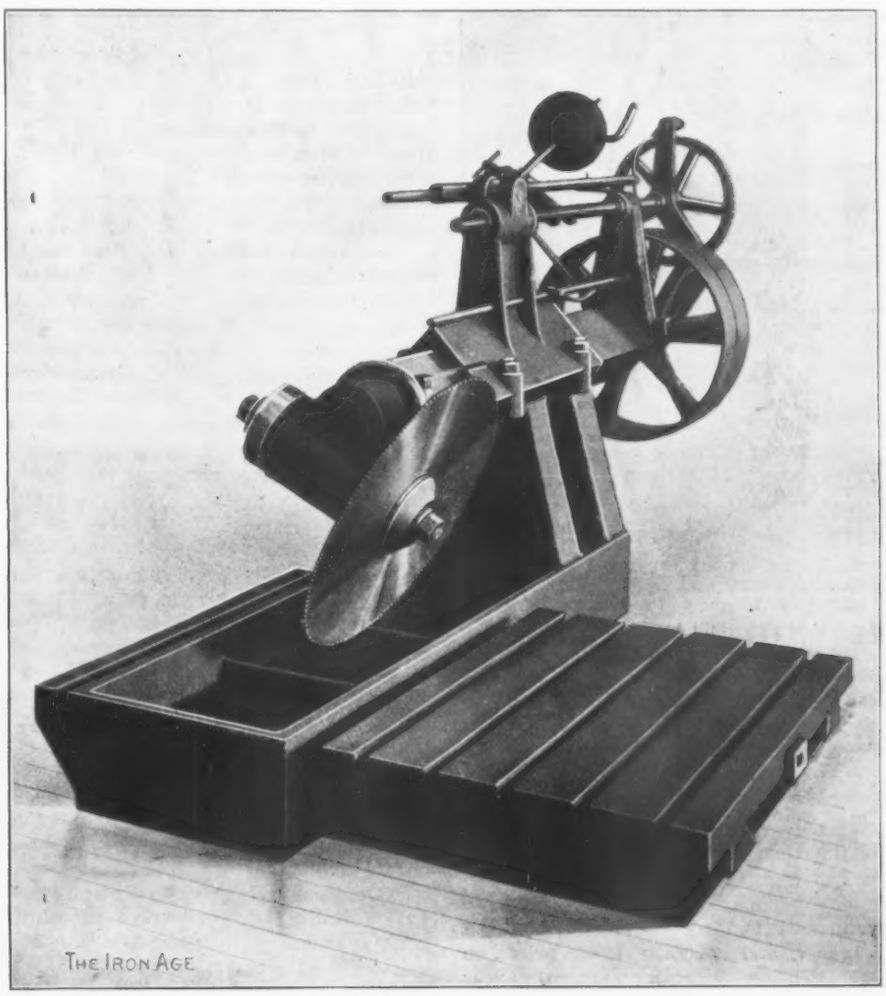


Fig. 1.—The No. 2 Cold Saw Built by Gustave Wagner, Reutlingen, Germany.

The apparatus furnished with the machine for holding the work operates in a simple and rapid manner and contains two jaws, which are fixed on the main bed and the sliding table and are fitted with prismatic grooves to hold round irons or small girders and U irons of various sections in a vertical position. The piece to be cut is strongly gripped, which is a protection against damage to the saw blade in case of too rapid feeding. The saw

blade meets the work in the most favorable position, and the cutting is done in the quickest possible time. Round irons and pieces of small section can be tied up in bundles and a number cut at one operation.

The machine illustrated in Fig. 2 is provided with a saw blade about 16 inches in diameter and will cut a section up to about 5 x 12 inches. The machine complete, as illustrated, weighs about 1700 pounds. The machine illustrated in Fig. 1 carries a saw 24 inches in diameter and will cut a section 8 x 20 inches. The sliding table is guided in dovetail ways and can be shifted by a screw and bevel gears. The arrangement is such that there is no operating handle which can come in the way of the

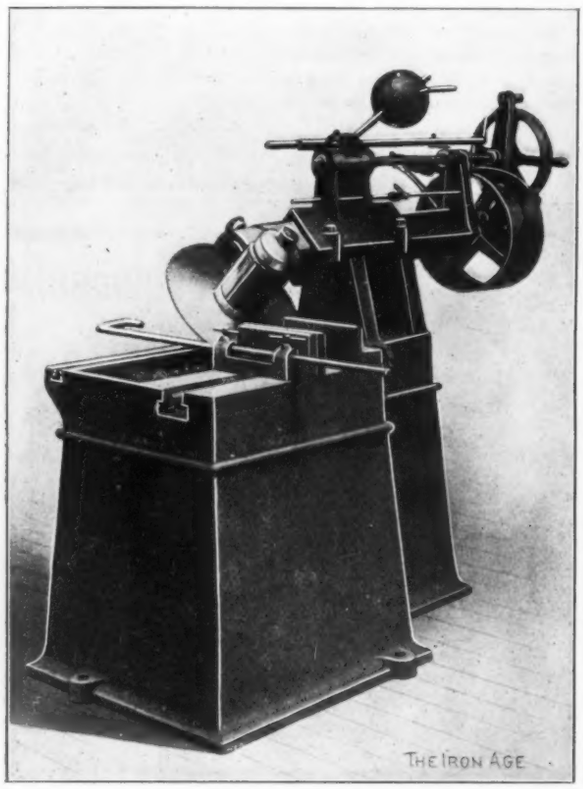


Fig. 2.—The No. 1 Cold Saw Built by Gustave Wagner, Reutlingen, Germany.

piece which is being cut. Both types of machine can be directly driven by electric motors or by gear drive in place of the belt arrangement which is shown in the engravings.

The Standard Underground Cable Company.—The annual meeting of this company was held in its offices in the Westinghouse Building, Pittsburgh, last week. Despite the general depression in business, the orders received were larger in 1904 than in the preceding year, but competition was keener, and generally lower prices on products prevailed. The gross business for the year amounted to $8,571,553, which represented the combined output of all the plants of the company, not counting the extra rods rolled for the company's copper wire mills. The including of references to rod and wire mills, weather proof factory, insulating wire factory and cable factories gives some idea of the way in which this business has extended during the past few years. Out of the net earnings the usual 12 per cent. dividends have been paid, amounting to about $240,000, and a large sum was applied to surplus. The old officers were re-elected, consisting of Mark W. Watson, president, and Joseph W. Marsh, vice-president and general manager.

The output of the Dominion Iron & Steel Company, Sydney, C. B., for 1904, is stated to have amounted to 143,113 gross tons of steel of all kinds and 96,601 tons of pig iron. The company imported 222,000 tons of iron ore for use in blast furnaces. There were consumed 385,000 tons of coal, mostly in the manufacture of coke, of which the production was 170,000 tons. The production of tar amounted to 1,650,153 gallons; of sulphate of ammonia, 346,557 pounds; of sulphuric acid, 2631 tons.

Pacific Coast Trade Notes.

SAN FRANCISCO, CAL., January 21, 1905.—The prospect for good crops continues very promising. We have had sufficient but not copious rains at intervals for the past two weeks. The South has had ample share as well as the North, and the conclusion of the United States Weather Bureau is that crops of all kinds will be very large this year. There has been a lull in trade for the past couple of weeks, as there generally is at this season, but business men are almost unanimous in the opinion that 1905 will be a much more successful business year than 1904. A leading hardware jobber of this city says that, although 1904 was a good year, his conclusion is that 1905 will be very much better. He says that, whereas California used to depend first on gold and then on wheat, it is no longer what has been called a one-crop country. Hence there cannot be in these days a total failure of crops.

The new year promises a large demand for structural steel. Several buildings have already been projected that will have steel frames, and in the case of one, the Manadock, on Market street, between the Palace Hotel and the *Examiner* Building, a contract has been let for $100,000 worth of structural steel for the building, which will cost altogether upward of $1,000,000. Another building for which a great deal of money will be spent in the fitting up is the Fairmount Hotel on Nob Hill.

The retail hardware dealers held their annual convention in Stockton this week. The retailers' organization has grown with great rapidity during the past few years, and there is no longer any feeling of conflicting interests between the jobber and the man who brings him in contact with the public, both classes working together for the common good.

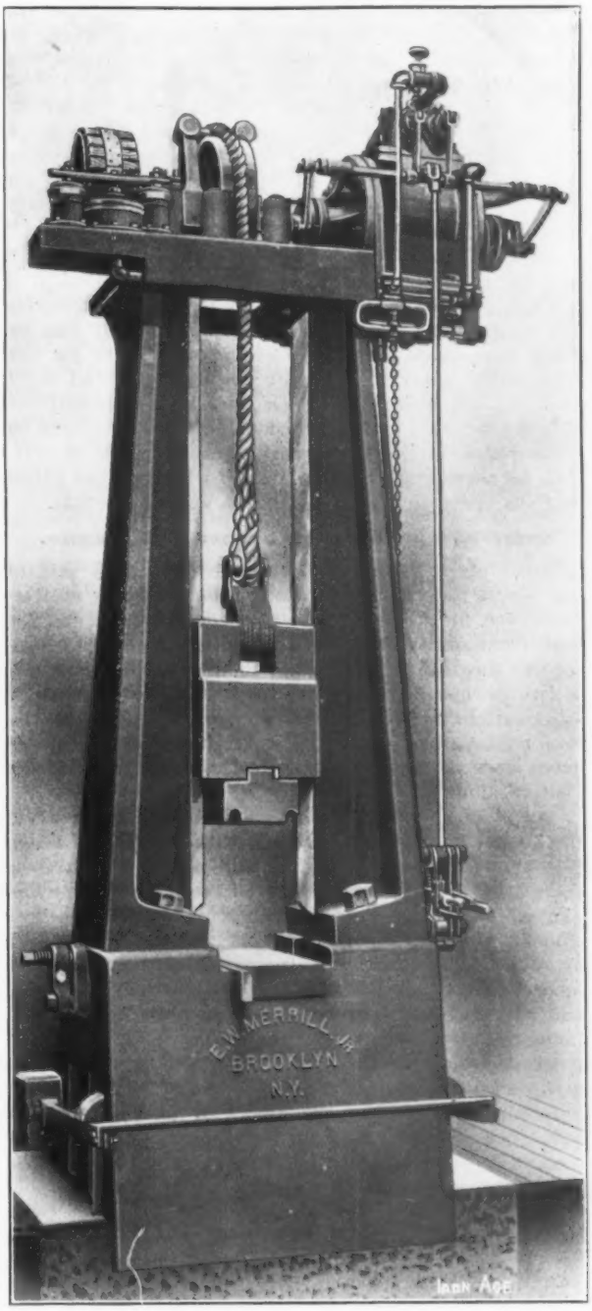
The proposed revision of the law on transportation brings up again the old question of rates from seaboard to seaboard, from New York and Philadelphia to San Francisco, Portland, Seattle, Tacoma, Los Angeles, &c. These rates by rail are necessarily lower comparatively than those from interior points, such as Chicago and St. Louis, to the Pacific Coast, and any change in the law which would bring about mileage rates would be resented by the withdrawal of a large portion of freight from rail to sail and steam. As regards the matter of rebates, which at one time prevailed extensively, the practice created such dissatisfaction after a few years' trial by the roads that it was given up. A totally independent question is the difference between carload and less than carload rates, which is founded on purely business principles, and which besides protects the trade of the coast from the jobbers of the Central West. The maintenance of the differential will be fought for by the hardware and steel and iron merchants of this coast.

Two deeds were placed on record this week by which James Smith, Jr., receiver of the United States Shipbuilding Company, transfers to George R. Sheldon the real and personal property of the Union Iron Works. This transfer is in accordance with the plans for reorganization published some time since. This is satisfactory to everybody interested, except perhaps the citizens of San Francisco, who are by no means pleased at seeing the control of this plant pass definitely into the hands of outside parties. True, no less a person than Mr. Schwab assured us that the Union Iron Works as an institution would in the future eclipse the splendors of the past; but for all that, all on this side of the Sierras would much sooner see it as it used to be under the control of our home capitalist. Every San Franciscan feels a personal interest in its welfare.

Imports for January thus far have not been very large. The export trade by sea has been light also. Considerable shipments of machinery, including a good many gas and oil engines manufactured here, have been sent by steamer lately to Australia. The Sierra had quite a number on her last trip. Exports to the Orient have fallen off since the beginning of December. J. O. L.

The Merrill Improved Steam Drop Hammer.

The new features in the drop hammer herewith illustrated and manufactured by E. W. Merrill, Jr., Brooklyn, N. Y., are mainly in the part which is known as the lifter—*i. e.*, the mechanism for raising the hammer. In its improved form the lifter may be placed over any style of drop hammer and the hold-up latch, ordinarily fastened to the upright and engaging the hammer to hold it at different hights, is done away with. By dispensing with this latch the noise and shock upon the working parts and the consequent wear and tear are eliminated. The result is a comparatively noiseless drop hammer, the only perceptible sound being that caused by the blow when the hammer is working.



The Merrill Improved Semi-Rotary Steam Drop Hammer.

In place of the latch there is now substituted a brake securely fastened to the lifting shaft. This brake works in conjunction with the main valve, which operates the lifter, and the instant the lifting shaft stops the brake is automatically applied, securely holding the shaft in the position at which it is set to stop, with the hammer suspended. The hold-up brake is released at will by a small controlling valve, which is connected to the foot treadle by a light chain or rod. When the treadle is kept depressed the hammer will deliver repeated blows until the foot is removed, or a single blow may be given by releasing the treadle after the hammer strikes. It is also possible to strike a suppressed blow when the treadle is depressed but slightly. If for any reason the supply of steam or compressed air should be interrupted, the hammer cannot fall, even though the treadle be depressed, as steam or air pressure is required to operate the controlling valve before the hammer can drop.

As the entire operating mechanism of the lifter is self contained on the one bed plate it can be placed over any style of drop hammer. These lifters can be constructed to raise the hammer as high as 8 feet and at the same time are adjustable to any intermediate hight of fall, even to a drop as low as 6 inches.

The change to make the hammer trip automatically at any hight between the lowest and highest limits of fall requires only a few turns of a small turnbuckle, and may be made in the fraction of a minute. This adjustment to any hight of fall cannot be made while the hammer is in operation. The number of blows delivered per minute depends upon the steam or air pressure. Under ordinary conditions 100 blows per minute may be delivered with a 1-foot fall, 75 blows with a 2-foot fall, 60 blows with a 3-foot fall, and so on proportionately for greater distances of drop.

When setting the dies the hammer can be lowered and held rigidly suspended in any desired position, or gently lowered until the faces of the dies meet. When the hammer is held stationary in a raised position steam is not consumed, as the tension upon the brake which holds the lifting shaft is applied by two powerful compression springs. The drop can be worked without much effort on the part of the operator, as it requires but a slight pressure upon the treadle to open the brake valve. The motive power being steam or compressed air it is possible to place the machine in any convenient location where a supply pipe can be carried to it.

By this method of lifting it is possible to successfully raise very heavy hammers. Forgings 240 pounds each have been formed from the solid by hammers raised in this manner. The hammer delivers a free and heavy blow, as there is nothing to retard its fall. The catching of the hammer on the rebound is instantaneous, which eliminates all drag and a double blow after the dies strike. The valves and working parts do not require adjustment from time to time, consequently skilled labor is not necessary for its operation.

The Milan International Exhibition, 1906.—The managers of this proposed world's fair have brought to the notice of the Italian Minister of Agriculture, Industry and Commerce the necessity of formulating special legislative provisions (as has been done before in the case of all previous international exhibitions) to give protection to everything that will be sent to the exhibition from abroad. The derogation is asked of Articles 50, 64 and 68 of the law on Italian patent rights, &c., and suspending the prohibition of introduction into the kingdom of objects similar to those protected in the kingdom, limiting the right to sequester infringements or articles bearing forbidden marks to the sole cases in which the person who provokes the sequestration holds the rights in the same country as the person who is to suffer the sequestration. The Minister has taken the matter into consideration.

London bank clearings have shown a steady increase during the last decade, but their growth is small as compared with the increase in New York clearings during the same period. In 1896 the clearings in New York amounted to $28,870,000,000, while the clearings in London were $36,890,000,000. In the year 1898, for the first time in history, the clearings in New York exceeded the clearings in London. In no year since then have the London clearings amounted to as large a total as the clearings in New York. Last year the clearings in New York amounted to $68,649,000,000, as compared with $51,447,000,000 in London. The bank clearings in New York are now greater than in any other city in the world.

German View of American Industry.

Frank H. Mason, United States consul general at Berlin, Germany, makes the following report to the Department of Commerce and Labor:

The throng of German engineers, mechanics, scientists, educators, merchants and manufacturers who went to America during the past summer, not only to see the Louisiana Purchase Exposition but to travel over the United States and examine with expert intelligence the details of American railroad management and our agricultural and industrial methods, are now returning and relating to their neighbors and colleagues what they have seen. One can hardly take up a German newspaper without finding a more or less extended report of what some one of these clever observers had found and learned in the United States, and has related to his verein or local chamber of commerce, with his comments and conclusions as to what it all means to Germany. It has been no mere pleasure trip to these thoughtful gentlemen, but an earnest, serious effort to learn everything possible of the real productive and commercial strength of our country, and what Germany will have to meet and compete with in the future struggle for a growing share in the world's trade.

German Experts Find Defects in Our System.

It is quite worthy of note that the general tone of these reports is distinctly reassuring to the hearers before whom they have been delivered. While admitting freely the boundless resources of our country, the energy, industry and unsurpassed mechanical skill of the people, the superiority of our factory system, the speed and cheapness of rail transportation, and the restless, progressive spirit which is always looking for a new and better machine or method than the one already in use, the German experts find, or think they have found, defects in many parts of the American system, which unless reformed will continue to weaken our country's grasp upon international trade and promote the interests of competing nations. Without necessarily concurring in these criticisms, it may be of timely interest to hear and consider briefly what they are.

There has been noticed to begin with on the part of our people a general feeling of complacent satisfaction with everything American, a secure conviction that whatever is done or produced by them is the best, and that they have only to keep on as they have begun to have the future securely in their hands. There is, say these critics, a pervading ignorance and indifference about everything outside the United States that from the German standpoint will be, unless corrected, a serious handicap in our quest for foreign trade. The careless confidence with which agents and salesmen are sent abroad, with no special preparation and with no knowledge of any language but their own, to do business in countries where only a trifling percentage of the population understands English, strikes these careful, methodical European experts as amazing. The meagerness of technical education, the trifling annual contingent of chemists, engineers, educated dyers, weavers and electricians, as compared with the throng of lawyers, physicians, dentists and unspecialized graduates turned out by our colleges and universities, seems to them shortsighted and improvident. The high standing and excellence of a half dozen great technical schools in the United States are frankly conceded, but what are these in a country of 80,000,000 of people in which practically every student is destined for an active and useful life?

Absence of Special Commercial Training.

But most surprising of all appeared to the German visitors the absence of any adequate system of special education for commerce, banking and foreign trade. They consider our so-called commercial colleges, where young men with a district or grammar school education are rushed through a three months' course of bookkeeping and commercial usages, as little better than a farce. One of the visitors, a stadtrath and professor of commercial ethics, talked with some of the students of such an institution in one of the Eastern cities, and was surprised at their limited and superficial knowledge, their ignorance of languages, and nearly everything else outside the United States, and their cheerful confidence that their 10 weeks at the "college" would equip them for success anywhere. Reduced to simplest terms, these investigators generally conclude that the reliance on a general and more or less superficial education, together with natural adaptability, to fit young men for almost every walk in life, and the lack of specialized study in physical science, modern languages and the industrial arts, will if persisted in neutralize much of the advantage which our country enjoys through natural resources and advantageous geographical position for the South American, Mexican and Asiatic trade. They note also the enormous disparity between American and European wages, the high rates charged by express companies, and the general heavy cost of handling business in the United States, and conclude that on the whole the "American danger" has been greatly exaggerated, and that a steadfast adherence by Germany to the educational system and commercial methods now in practice will leave the Fatherland little to fear in future competition with American manufactured goods.

In just what degree these observations are correct and the resultant conclusions logical and justified it is not the purpose of this report to inquire. Inevitably the observations which have been here roughly summarized were made from the German standpoint by men who might naturally overlook or misunderstand much that did not conform to their theories and traditions. But the fact that such conclusions have been declared by trained observers, after several months of close observation, may well suggest the reflection whether some points in their criticism should not be taken into account.

Overconfidence Our Most Dangerous Weakness.

Certainly it should not continue to be truly said of our people that their most dangerous weakness is overconfidence, an undue reliance in their own skill and the innate superiority of everything American, and their consequent unwillingness to adapt their goods to the wants of foreign consumers, or make the systematic effort which other nations have found necessary to build up and maintain a prosperous export trade. That this danger really exists does not rest upon the testimony of the German visitors alone.

An eminent English technician who recently visited the United States was impressed with the lack of scientific knowledge on the part of foremen and high class operatives, and the indifference on the part of their employers to the latest and highest perfections in machinery. The latter portion of this criticism is confirmed by various Americans who are engaged in supplying new labor saving machines to Great Britain and Germany, and who find that progressive foreign firms in the metal industries are more enterprising than their American rivals in adopting up to date labor saving equipments of American origin. Germany and Great Britain afford especially good markets for American machinery of the best types. Not only this, but the labor conditions abroad seem to favor the use of such perfected machinery. This opens up the latest and most important fact in the whole situation, which is that the conditions of labor, especially in the metal industries, are rapidly changing—have, indeed, changed in England and Germany since the great machinists' strike in Great Britain and since the Germans have learned that it is against America, not Europe, that their industrial strength must in future be measured.

An incident which illustrates this is related by a leading American manufacturer of machine tools and has been published on both sides of the Atlantic. The manager of a large machine shop in Berlin was about to order a new machine tool, and sent to an American factory sample pieces to be worked by it in order to ascertain precisely the time that would be saved and how well the work would be performed. The pieces were worked out and returned, with a report of the time occupied by each operation. Among others, a piece had been roughed out to the required size by an engine lathe in seven minutes. Shortly after the American manufacturer visited the Berlin shop and was shown the written

tag affixed to the piece and was told that it was absurd—that the lathe work would require at least an hour. He then offered to demonstrate that it could be done in seven minutes, the engine lathe having meanwhile arrived and having been set up ready for work. But the German foreman said, "No, that was unnecessary; if the Americans can do it in seven minutes we can." Two days later the foreman reported that under his supervision the lathe had done the work in five minutes.

German Ambition to Beat the Foreigner.

The story is pertinent only as a proof and illustration of how German shops are being supplied with the very latest and most highly perfected machinery, and how German workmen have been taught to take the American rate of production as the standard and to work up to or even beyond it. Realizing that the future prosperity of German manufacturers will depend, as now, largely on their export trade, and consequently their ability to compete with those of America, German workmen of the better class have come to the conclusion that their best interest is to be as efficient and productive as possible. There is a new and pervading ambition to beat the foreigner wherever possible at his own game and with his own tools. When it is remembered that this highly educated, efficient and ambitious labor costs the employer only from one-third to one-half the wages that are paid in the United States, and that it is comparatively tractable and easily managed, it will be seen that a situation is being developed here which our countrymen will do well to take into account.

In no other country is banking capital so largely, so skillfully and so effectively used to develop and sustain manufacturing industries and to market their products in foreign countries as in Germany. A large, enterprising and steadily growing merchant marine carries the products of German industry to every part of the inhabited globe. The united influences of the Government, the powerful sale and trade syndicates and the capitalists who found banks and finance railroads in new countries, are all intelligently and systematically exerted to give Germany a front place in the list of exporting nations.

As Germany has been clever and enterprising in adopting and making the best use of improved methods and machinery from abroad, so the nations which, like our own, must meet this competition in the world's markets, will find it needful to imitate her methods in much that relates to thoroughness in specialized education in the art of adapting and selling goods to alien peoples, and to high service in everything that pertains to the development and maintenance of foreign trade.

Morse Elevators in the Pittsburgh District.—Morse, Williams & Co., Philadelphia, have opened a branch office at 1018 Penn avenue, Pittsburgh, Pa., for the sale and erection of all classes of passenger and freight elevators. A practical elevator man is in charge of the office and will submit preliminary plans and specifications or furnish elevator information to builders, architects or owners. The firm states that since its establishment, 30 years ago, it has sold 17,000 machines. The line includes everything from the largest freight elevator down to a hand power elevator or a dumbwaiter.

Saturday night, January 28, was designated as "Engineers' night" at the University Club in Milwaukee. The club has recently taken up the occupancy of its new club house on Jefferson street, and a series of special evenings has been arranged for the winter season. Among those who were present were Edwin Reynolds, consulting engineer, and A. M. Mattice, chief engineer, Allis-Chalmers Company; Alonzo Burt, president, and E. B. Cottrill, general superintendent, Wisconsin Telephone Company; Col. E. G. Pratt, general manager, and R. B. Brown, chief engineer, Milwaukee Gaslight Company; John I. Beggs, president, and C. J. Davidson, chief engineer, Milwaukee Electric Railway & Light Company, and Fred M. Prescott, president, Prescott Steam Pump Company.

Pig Iron Production in 1904.

The following statistical information is taken from the *Bulletin* of the American Iron and Steel Association for February 1:

The American Iron and Steel Association has received from the manufacturers complete statistics of the production of all kinds of pig iron in the United States in 1904, also practically complete statistics of the stocks of pig iron that were for sale on December 31, 1904. We have received reports of production directly from every furnace in the country, but we have been refused by the owners the statistics of unsold stocks held by five small furnaces. From other and trustworthy sources, however, we have received careful estimates of these stocks, so that the stock statistics we present are for all practical purposes complete and correct.

Total Production.—The total production of pig iron in 1904 was 16,497,033 gross tons, against 18,009,252 tons in 1903, 17,821,307 tons in 1902, 15,878,354 tons in 1901, 13,789,242 tons in 1900, 13,620,703 tons in 1899 and 11,773,934 tons in 1898. The following table gives the half yearly production in the last four years in gross tons:

Periods.	1901.	1902.	1903.	1904.
First half.....	7,674,613	8,808,574	9,707,367	8,173,438
Second half....	8,203,741	9,012,733	8,301,885	8,323,595
Totals.....	15,878,354	17,821,307	18,009,252	16,497,033

The production of 1904 was 1,512,219 tons less than that of 1903. The production in the second half of 1904 was 150,157 tons more than that of the first half. The causes of the decline in production in 1904, as compared with 1903, are so well known that they need not be dwelt upon in this connection, but it is worthy of mention that the last four months of 1904 showed great and steadily increasing activity in production. This rate of production was continued and exceeded in January of the present year.

Classified Production.—The production of Bessemer and low phosphorus pig iron in 1904 was 9,098,659 tons, against 9,989,908 tons in 1903, a decrease of 891,249 tons.

The production of basic pig iron in 1904, not including charcoal of basic quality, was 2,483,104 tons, against 2,040,726 tons in 1903, an increase of 442,378 tons.

The production of charcoal pig iron in 1904 was 337,529 tons, against 504,757 tons in 1903 and 378,504 tons in 1902. The production in 1904 was 167,228 tons less than in 1903 and 40,975 tons less than in 1902.

The production of spiegeleisen and ferromanganese in 1904 was 219,446 tons, against 192,661 tons in 1903. The production of ferromanganese alone in 1904 amounted to 57,076 tons. One company produced 946 tons of ferrophosphorus in 1904.

A significant feature of the above statistics is the increased production of basic pig iron in a year of generally reduced production.

Unsold Stocks.—The stocks of pig iron which were unsold in the hands of manufacturers or which were under their control in warrant yards and elsewhere at the close of 1904, and were not intended for their own consumption, amounted to 408,792 tons, against 623,254 tons on June 30, 1904, and 591,438 tons on December 31, 1903. The American Pig Iron Storage Warrant Company held 55,350 tons of pig iron in its yards on December 31, 1904, of which 17,700 tons, included above, were reported to us as being still controlled by the makers, leaving 37,650 tons in other hands. Adding this 37,650 tons to the 408,792 tons noted above gives us a total of 446,442 tons that were on the market at the close of 1904.

Furnaces.—The whole number of furnaces in blast on December 31, 1904, was 261, against 216 on June 30, 1904, and 182 on December 31, 1903. The number of furnaces in blast at the end of 1904 was 45 larger than on June 30 of the same year and 79 larger than on December 31, 1903.

G. A. Hassel has been appointed superintendent of the plant of the Pittsburgh Steel Foundry, at Glassport, near Pittsburgh, to succeed D. MacDougal, who has resigned, and after a rest will engage in another line of business.

The Interpole Variable Speed Motor.

The desirability of means for quickly changing the speed of certain classes of machinery, notably machine tools, is too well appreciated to call for discussion. It is the usual practice to obtain this variable speed in one of two ways, either by mechanical devices which allow of variable speeds with a constant speed drive, or electrical means for varying the driving speed. The latest addition to the latter class is the interpole variable speed motor built by the Electro Dynamic Company, Bayonne, N. J.

There are certain important conditions essential in a variable speed motor which this motor is claimed to fulfill and which are made a part of the guarantees contained

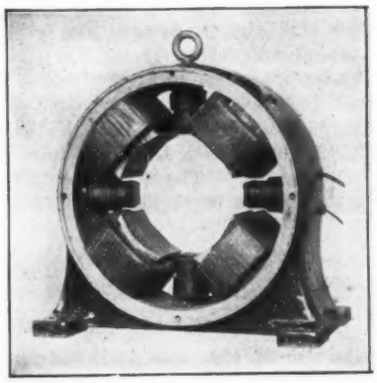


Fig. 1.—The Motor with Armature and End Shields Removed, Showing the Fields and Interpoles.

in its specifications. They are reversibility, nonsparking under heavy overloads, large range of speed, speeds constant at all loads when adjusted to any desired speed, compactness, simple wiring, simple control, simple accessories, light weight and high efficiency under average loads. With this motor speed variation is offered in ranges of 2 to 1, 3 to 1 and 4 to 1. These may be increased if desired, but they cover those most often called for, the variation usually required being from about 250 to 1200 revolutions per minute.

Almost any intermediate speed within the range of variation can be obtained with a certainty that practically constant speed will be maintained under varying loads. Changes can be made instantly, and the controlling apparatus can be placed anywhere on the tool or

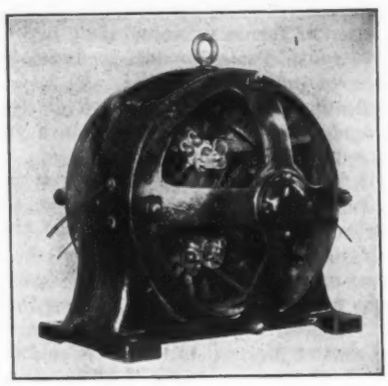


Fig. 2.—The Interpole Motor Completely Assembled.

machinery for convenience of operation. In many kinds of machine tool work a great saving and increase in output are effected with variable speed direct drive as compared with belt drive, especially where a number of changes in speed are necessary. In the interpole motor the torque is increased as the speed is decreased, and this is important both in maintaining constant speed and in having the tool work uniformly and with the greatest cutting capacity. The motor has shown good efficiency both at the highest and lowest speeds, with a high average efficiency.

Current is taken from an ordinary standard two-wire system, the motor being connected across the circuit like any constant speed motor. The interpole motor occupies a comparatively small space, as will be noticed from the illustrations, which is one of the most essential features, and it is also light in weight. There are no parts subject to wear other than are contained in any standard constant speed motor. There is practically nothing to get out of order, and it may be seen that the internal construction is very simple.

It often happens that, through carelessness, too much oil is poured into the receptacles or oil cups of a motor, so that the coils and commutator become fouled with oil or grease, and sparking or short circuiting results, often causing injury to the armature before the neglect is discovered, but in the interpole variable speed motors ball bearings are used, which require only the application of a little vaseline once in six months. The cost of maintenance of the motor is low, due to perfect commutation, and it is capable of withstanding 100 per cent. overload without sparking.

The principle of the construction and operation of the interpole variable speed motor whereby its desirable performance is obtained will be understood from reference to the accompanying illustrations. It will be seen from Fig. 1 that between the main poles of the machine there are intermediate smaller poles, the faces of which, with those on the main poles, form very nearly a complete ring to encircle the armature. The winding of the motor is peculiar. In one sense it is a shunt motor, and in another a compound motor. If the intermediate poles were removed the motor would be a simple shunt motor, the

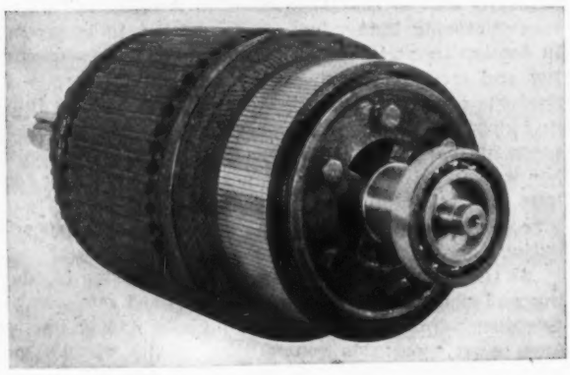


Fig. 3.—The Armature of the Interpole Motor, Showing One of the Ball Bearings.

field coils being connected across the main line. The coils which would ordinarily be considered compounding coils —*i. e.*, those in series with the armature—are wound on the intermediate poles, but have a different effect from that intended in a compound motor. Their purpose is to correct the distorted magnetic field attending the weakening of the main field current necessary when higher speeds than normal are wanted. By so doing they avoid the sparking which would result in an ordinary motor, due both to the self induction in the armature coil which is short circuited at the instant that its corresponding commutator segments pass under the brush and to the armature reaction. In the ordinary motor the evil effects of self induction are alleviated by the shifting of the brushes, which, of course, makes it impossible to reverse the motor without shifting the brushes to a corresponding position in the opposite direction. A very desirable result attending the use of the intermediate poles is that it is not necessary to shift the brushes, no matter what the load, as they are placed at the normal neutral position, and the motor will run quite as well in one direction as another.

The complete motor is shown in Fig. 2, and a view of the armature removed in Fig. 3. The latter shows clearly one of the original features of the motor, which is the use of a ball bearing instead of a babbitted bearing. This bearing is of a special form known as the Hess-Bright ball bearing. Its peculiarity is that the balls are separated by springs, with thin plates at their ends, the purpose being to avoid the rubbing of one ball against another

and reduce this source of friction found in the ordinary ball bearing. Within the coils of the springs are inclosed pieces of wool saturated with vaseline or a similar heavy lubricant, supplying such slight lubrication as is necessary. The ordinary oiling and the use of oil cups are entirely done away with, and, as has been stated, these bearings require no attention oftener than about once in six months, when it is well to remove the cover and again saturate the wool packing if it is needed. A very desirable feature of the ball bearing is its very slight wear and the maintenance of perfect concentricity of the armature within the pole shoes, which contribute to the best electrical performance.

The Premier Diamond Mine.

The London *Economist* in a recent issue, prior to the discovery of the 3000-karat diamond in the Premier mine, prints the following relative to that enterprise:

The second annual report of the Premier diamond mine shows that during the year ended October 31 last the profits amounted to £667,783, which, added to the balance brought forward from the previous year, places the sum of £770,601 at the disposal of the directors. This amount is to be used for the development and equipment of the property, the future of which is of exceptional interest, in that from November 1 last 60 per cent. of its profits will, under the Diamond ordinance of the Transvaal, be handed over to the Transvaal Government. The nominal capital of the company, which is only entitled to 40 per cent. of the profits, is £80,000, but as its £1 shares stand at £80, the market value is £6,400,000. This being so, the Transvaal Government's share of the capital value of the mine is worth on the present market basis about £9,600,000. Here is an asset worth having, and if the mine comes up to expectations it will yield a large revenue to the Transvaal. The directors, it may be said, are endeavoring to obtain a reduction of the proportion they will be required to pay to the State, and it is stated that 50 per cent. is the figure which they suggest. But even if this were granted, the State's share would amount to a large annual sum, provided, of course, the mine yields the results predicted. Hitherto the fate of a diamond mine in South Africa has depended largely on the attitude adopted toward it by the De Beers Company. Our special mining commissioner, however, has stated, in dealing with the Premier, that, in his opinion, the latter is too powerful for the De Beers either to purchase it or to starve it out. Besides, the enormous interest possessed by the Transvaal Government in the mine should be a strong point in its favor in the event of it becoming involved in a struggle with De Beers. The future of the Premier mine, indeed, may have highly important results, both as regards the world's diamond industry and the revenue of the Transvaal.

A New Lukens Mill for Wide Thin Plates.—The Lukens Iron & Steel Company, Coatesville, Pa., has installed a mill 112 inches long by 36 inches in diameter, for the manufacture of very wide thin plates. This mill can roll 3-16 inch and No. 8 B. W. G. up to 108 inches wide and No. 10 B. W. G. up to 102 inches wide. The following extras are charged in addition to the Plate Association extras:

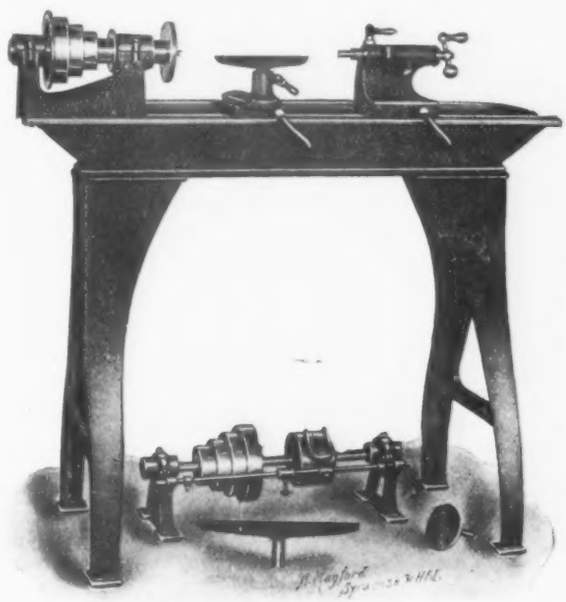
Thickness.	Width.—Inches.	Extra. Cent.
3-16 inch	72 to 84 inclusive.	0.1
3-16 inch	84 to 96 inclusive.	0.2
3-16 inch	96 to 102 inclusive.	0.3
3-16 inch	102 to 108 inclusive.	0.5
No. 8	72 to 84 inclusive.	0.1
No. 8	84 to 96 inclusive.	0.2
No. 8	96 to 102 inclusive.	0.3
No. 8	102 to 108 inclusive.	0.5
No. 10	65 to 70 inclusive.	0.1
No. 10	70 to 84 inclusive.	0.2
No. 10	84 to 96 inclusive.	0.4
No. 10	96 to 102 inclusive.	0.5

The company claims to have the only mill in America which can make these sizes, which are suitable for a variety of special work. It is believed that manufacturers of tanks and stacks will appreciate the opportunity thus offered to secure plates dispensing with the extra riveting required in the use of narrow ones.

The Star 10-Inch Wood Turning Lathe.

Some rather novel features for a wood turning lathe are found in the one illustrated herewith. It may be said in general that there is not the tendency to improve wood turning lathes that has marked the advance of recent years in lathes for iron and metal. Chief among the new points embodied in this lathe, which is made by the Seneca Falls Mfg. Company, 255 Water street, Seneca Falls, N. Y., are the design of the bed and standards and the form of the head stock and tail stock castings. A feature which contributes to convenience is the provision of handles on all nuts and locking contrivances which there is occasion to manipulate frequently, doing away with wrenches. The lathe, rated as a 10-inch size, has an actual swing of 11 inches over the ways and 7 inches over the hand rest.

The head stock is of web pattern, strong and solid, and has a hollow spindle made from a crucible steel forging. The spindle runs in large phosphor bronze bearings, which are dust proof and self oiling, and is claimed



The Star 10-Inch Wood Turning Lathe, Built by the Seneca Falls Mfg. Company.

to run at a very high speed for a very long time without attention. The cone pulley has four steps and is turned inside as well as outside to obtain a perfect balance for high speed.

The tail stock is the curved, or cut under, pattern and has a long bearing on the ways. It is firmly locked to the bed by a convenient lever, which is attached and always in place. The tail stock spindle is also locked by an improved device. Long and short T rests are furnished. The rest socket and saddle are locked to the bed by a clamp locking device, and the T rest is held in the socket by a friction clamp instead of the set screw commonly used. Both are operated by attached levers.

The bed is broad and deep, and being thoroughly braced by the cross webs is stiff and rigid. At the present time it is made in two lengths, 4 and 5 feet. The front way is flat and the back way is V-shaped. A convenient shelf is secured to the back of the bed for holding tools, &c. The countershaft is self oiling and has self aligning bearings, four-step cone and tight and loose pulleys. The loose pulley has a self closing oil cup. Face plate, screw chuck, cup and spur centers are furnished with each lathe, and when desired a slide rest for metal turning will be furnished.

The New Reed Ball Bearing Friction Drill.

Several original features are to be found in the light sensitive drill illustrated herewith and designed by the Francis Reed Company, Worcester, Mass., especially to handle the new high speed steel drills. The machine occupies little floor space and belts direct to the main line shaft, requiring no countershaft, and has a wide range of capacity. The friction plate is over the driving pulley and its working surface being on the under side, all dirt is kept from between it and the rim of the driving pulley. Another advantage is that the weight of the friction plate and shaft helps to maintain the contact, so that forced contact by means of the adjusting screw at the top is almost unnecessary. This screw is tightened by the fingers, sufficient pressure being obtained thereby, and a wrench should not be used. The screw rests on a ball bearing plate, with a spring to give a flexible pressure on

A Ball Bearing Sensitive Drill Made by the Francis Reed Company.

the plate shaft, which runs in ball bearings. Speed variation is obtained by turning the hand wheel on the right side of the machine, and a range as great as 3 to 1 can be obtained instantly without resorting to any changing of belts.

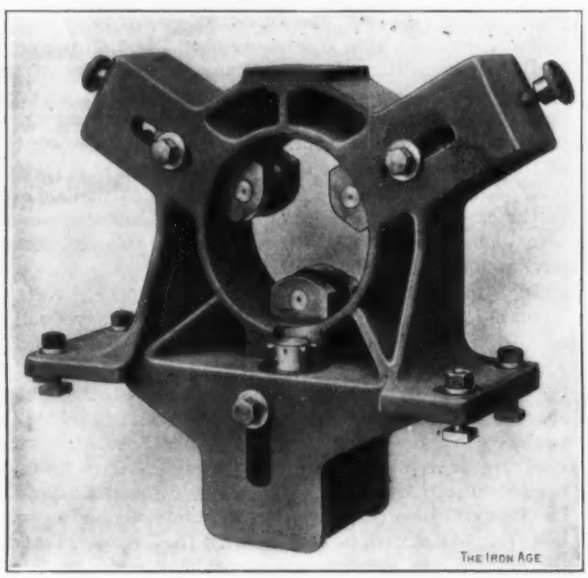
Another original feature of the machine is in the head, which slides on the standard, giving a travel of 10 inches to the spindle. The spindle has a ball bearing thrust column, and is provided with a Morse No. 1 taper, unless otherwise ordered. With the head sliding in this manner, the spindle is rigid in all positions and the lever can be adjusted to any length or position desired. Stop collars are provided to limit the travel of the head, the lower one having an adjustable screw so that the depth of the hole may be more accurately gauged. The head is counterbalanced by a spring that can be adjusted to any degree of sensitiveness.

Still another original feature is the friction clutch on the base. The lever on the right may be depressed by the foot which starts the machine, and by pressing with the left foot on the opposite end of the lever the machine may be stopped. The base of the machine is 20 inches in diameter; the steel supporting column is solid and 2 inches in diameter. The table is 15 inches in diameter and has a vertical adjustment of 27 inches. The greatest distance from the table to the spindle is 32 inches. The diameter of the friction plate is 10½ inches and the diameter of the friction driver is 5 inches. The total hight of the drill is 72 inches and it weighs 210 pounds.

It has been found by actual test that the machine is capable with a 9-16 inch drill of drilling through 4 inches of solid cast iron in 1½ minutes.

The Lodge & Shipley High Speed Follower Rest.

For heavy lathe work with high speed steel cutting tools, to obtain the best results, it has been found necessary, even with work of as great a diameter as 8 inches, to use some substantial support, such as a follower rest. The Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, has for some time been trying to obtain a material for the jaws of such a follower rest which would not cut out. Different metals were tried, but no satisfactory results were obtained until the plan was adopted of using rollers, as shown in the accompanying illustration. The rollers are hardened tool steel and are mounted upon hardened and ground steel shafts, upon which they are fixed by screws through the face of the rollers. Liberal oiling facilities are provided in the journals of the roller



The Lodge & Shipley High Speed Follower Rest.

shafts. A sensitive adjustment for the jaws is afforded by the knurled knobs, so that the jaws cannot be forced down too tightly.

Where it is desirable the follower rest is furnished with the pad at the top planed for the attachment of an angle bracket leading to the wings of the carriage on the opposite side, to insure great stiffness and rigidity. It is stated that with the latter arrangement on one of the company's high speed lathes the output on heavy bar work can be doubled from that possible where the lathe is used without such a rest.

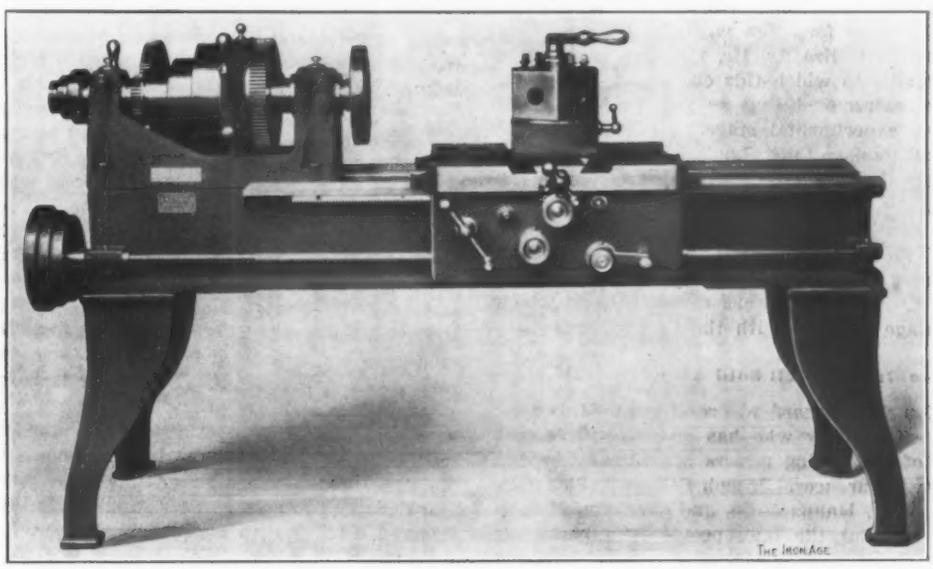
The King-Davis-Logan Anti-Trust bill is now the law of Arkansas, and the State occupies the unique position of being the only State in the Union with a law so drastic that no trust goods can be sold in the State, and no insurance company can do business within its borders if it is a member of any trust, combination or organization anywhere on earth to control rates in the State or elsewhere.

Plans for the new club house to be erected in New York for the Engineers' Club were filed last week with the Building Department. It is to be a 13-story structure of Colonial design, with a frontage of 50 feet on Fortieth street and extending back 197 feet to Thirty-ninth street, on which it will front 25 feet.

The American Manufacturing Turret Lathe.

The lathe illustrated herewith has been built especially for automobile builders, gas engine manufacturers and others having similar lines of work. It is a recent product of the American Tool Works Company, Cincinnati, Ohio, and, like most of the new machines that have lately been brought out by various builders, is especially designed to use high speed steel tools.

The bed is of deep section, of the company's patent drop V pattern, which gives the lathe 2 inches additional swing. At short intervals of its entire length it has cross box girders, making it very rigid. The carriage is very heavy, especially in the bridge, and has continuous bearings on the ways. It is gibbed to the bed its entire length. The turret has no overhang, and to give its slide a full bearing on the carriage bridge it is provided with an extra wide dovetail. An easily adjusted and very long gib is used on this slide. The turret is hexagonal in form and is provided with a substantial locking device of tool steel located in a convenient position at the right just below the turret, as shown in the illustration. Three



New Manufacturing Turret Lathe Built by the American Tool Works Company.

feeds, both cross and longitudinal, are obtained through a belt driven feed rod. They are engaged by friction locking devices in the apron. A convenient stop is furnished for properly locating the turret centrally for boring.

The head stock is also very heavy and is firmly bolted to the bed. The spindle is of high carbon special steel, accurately ground, and has a large hole extending through it. The bearings are of phosphor bronze, with improved oiling facilities and means for any necessary adjustment.

The lathe can be furnished in various sizes with plain back geared or friction geared head, belt or geared feed, with or without screw cutting feature and other attachments usually furnished with engine lathes. It is a powerful, simple tool, easily handled and capable of large output.

The consumption of the principal coal absorbing nations has been placed at the following figures:

	Tons.
United States	316,000,000
United Kingdom	167,000,000
Germany	103,000,000
France	47,000,000
Belgium	21,000,000
Russia	18,000,000

It will be noted that the United States, with 80,000,000 people, consumes almost exactly as much as the three next Powers, with a population of 135,000,000.

Congress Orders an Iron and Steel Investigation.

WASHINGTON, D. C., January 31, 1905.—The House of Representatives has directed the Secretary of Commerce and Labor to investigate the so-called Steel Trust under the resolution introduced January 18 by Representative Little of Arkansas, a minority member, who is the author of a number of measures directed against industrial combinations in the various trades. The action of the House only is required to put this measure into force. The text of the resolution as adopted is as follows:

Resolved, That the Secretary of Commerce and Labor be, and he is hereby, directed to investigate the conditions of the iron and steel industry of the United States for the purpose of ascertaining the following facts: Is the United States Steel Corporation and its associated and constituent companies engaged in commerce between the States and Territories or with foreign countries? And if so engaged, to what extent the iron and steel industries in the United States, including the output and price of its products, are controlled by said corporation and its associated and constituent companies?

To what extent said corporation and its associates control the output and prices of the finished products made by independent companies dependent upon it for their raw material?

To what extent, if at all, does said company or its associates sell its products cheaper to its export trade than it does to its domestic customers?

And whether said conditions have resulted in whole or in part from any contract, combination or agreement in the nature of a trust or conspiracy in restraint of commerce between the States and Territories or with foreign countries, and that he report his findings according to law.

The law in this case is found in section 6 of the act of February 14, 1903, creating the Department of Commerce and Labor, and bestowing upon the Commissioner "the same power and authority in respect to corporations, joint stock companies and combinations subject to the provisions hereof as is conferred on the Interstate Commerce Commission in said 'Act to regulate commerce,' and the amendments thereto in respect to common carriers so far as the same may be applicable, including the right to subpoena and compel the attendance and testimony of witnesses and the production of documentary evidence and to administer oaths." While the scope of the inquiry is practically unlimited and the authority of the Commissioner of Corporations is ample to compel the testimony of witnesses, &c., no method is provided for insuring publicity for the results of the investigation. It will be optional with the President whether any part of the conclusions reached by the Commissioner of Corporations is made public, and there is no limit upon the length of time that may be consumed by the Department of Commerce and Labor in the proposed inquiry.

W. L. C.

Lake Iron Ore Matters.

DULUTH, MINN., January 28, 1905.—Final figures of Lake ore shipments for the year, just compiled and including everything that has been moved by rail as well as by lake, are as follows, by the different ranges:

	1902. Gross tons.	1903. Gross tons.	1904. Gross tons.
Mesaba	13,342,840	12,892,542	12,156,008
Menominee	4,612,509	3,749,567	3,074,848
Marquette	3,868,025	3,040,245	2,843,703
Gogebic	3,663,484	2,912,912	2,398,287
Vermilion	2,084,263	1,676,699	2,282,513
Michipicoten	295,399	201,387	117,153
Baraboo	.....	.....	47,922
Totals	27,866,520	24,491,265	21,920,433

In the printed list of mines that produced during the year 135 properties are given, but the number is really considerably more than this. Still, properties have become so interwoven by joint ownership and management that it is hard to determine where the line of individuality shall pass.

All rail shipments of the year have been larger than were expected a few weeks ago. Some of the later shipments have a curious direction. Two Mesaba mines have been making shipments for a few weeks to Tennessee via the Great Northern Railroad. Mr. Hill has endeavored to extend the limits to which this ore might be hauled, though without extreme success as yet, for the whole matter is in an experimental stage. He induced shipments of a small tonnage to St. Louis in 1903 and now is working out into the South. The deciding factor in the present shipments was the fact that coal mining interests in the South were anxious to get their product northwest, and the Great Northern was anxious to have loads for its cars both ways. The tonnage moved has been from the Leonard and Laura mines, both of which are under haulage contract with the Great Northern.

Ore Output Well Sold Ahead.

The situation with regard to ores for sale this year is interesting. Everybody who has ores to sell is sold up, and some of the selling miners are already buying ores for their own furnaces. Joseph Sellwood, Pickands, Mather & Co., M. A. Hanna & Co. and Corrigan, McKinney & Co. are about the only people who have any Mesaba ores for sale, and the latter are now opening a new mine and are buying ores, it is reported, in order to take care of their own business. Sellwood has sold about 250,000 tons Leetonia and the same La Rue and somewhat less Cypress and his estimated output from other mines, and has now been asked to name prices on additional amounts from various mines, but has not done so except on a basis 25 cents a ton above the agreed rate for initial sales. M. A. Hanna & Co. have their Consumers' Ore Company, which gives a small tonnage, and their agency of Leonard and Pickands, Mather & Co. are too closely connected with the Lackawanna Steel Company to permit very large sales from their mines. The independent producers have been holding closely together this year with a distinct understanding, and the business has gone along very satisfactorily to them all. With the base price agreed upon of $3.75 for Old Range Bessemer 56 per cent. natural and 0.045 phosphorus, $3.50 Mesaba with the same analysis, $3.20 Old Range Non-Bessemer with a 53 per cent. natural, and $3.00 Mesaba, same analysis, there is the first approximation to the disappearance of the long existing differential against Mesaba, which has in past years varied to a most unjust and inequitable figure. Then the improvement in price over last year is not far from 65 cents a ton on some grades, which is a very good advance. That it is not too much is evidenced by the way furnacemen have taken up the ores offered and their insistence that they be given opportunity for more at the same rate.

In this connection it is interesting to note that the field from which the independent foundry furnaceman can draw his ores is more and more limited. This has been referred to in this correspondence for some time, but has not generally been believed by the parties most directly concerned and affected. Now, however, they seem to accept the prophecies that have been made as having a foundation worth careful consideration.

Should any one of the leading two or three independent sources of Mesaba ore supply become affiliated with steel making interests, as is now a matter that may be accomplished any day, there would be a rattling among the dry bones that would remind one of the castanets in a minstrel show.

Mining Activity.

Kinney mine of the Republic Iron & Steel Company is to be reopened and will probably produce a considerable tonnage this year. The mine has been unfortunate in that its assays on exploration have not been borne out by its cargo averages on development, and the mining company has been seriously incommoded thereby.

There is a decided change in the Gogebic situation, similar to that elsewhere in the Lake Superior region. Every mine in the neighborhood of Ironwood and Bessemer is taking on more men and has been adding to its force for some time. Newport has started at the Bonnie shaft and has 200 men there, with 150 hands at the old works. Aurora is to start A shaft at once and is putting men into the other parts of the property. Night shifts have been added at parts of Norrie, East Norrie and Pabst, and Ashland is increasing. At Sunday Lake there are 500 men now. Atlantic has added a night crew, and Mikado, Windsor and Carey have all put on more men.

The Oliver Iron Mining Company's ore crushing plant at Escanaba, which was half completed last year, is to be pushed forward so that both sides can be used, and work begins at once. The fines side is now to be erected and a steel building erected over the whole.

At the Great Western, Crystal Falls, which is now being unwatered, the pump crew a few days ago lowered the pumps 18 feet, made new connections and turned on steam in 100 minutes from the time it had been shut off at the higher level. There was an 18 foot 10 inch water column to lower and connect and a 4-inch steam pipe, as well as the pump itself. The water is now nearly out of the mine and operations will be renewed there at once. At Lamont mine, close by, the water is down about 750 feet. Lincoln is drained. The company operating them will add 250 men as soon as these mines start up. The Fogarty prospect at Stambaugh is to be opened and explored. It was an encouraging prospect some years ago.

Lincoln mine of Jones & Laughlin, Mesaba range, is resuming and will mine about 200 000 tons this year, unless an unexpected change is made in the company's plans. It is well equipped and will make a fine production. Susquehanna and Iroquois are not liable to resume, it would seem, from their present condition.

The Fort William by-law, referred to in *The Iron Age* of January 26 as then under consideration, has been passed. It grants the Atikokan Iron Company and Mackenzie, Mann & Co. land, exemption from taxation and the purchase of $200,000 of a bond issue of $1,000,000 by the company.

D. E. W.

One of the most powerful battle ships afloat is the Regina Margherita of the Royal Italian navy, which has recently proved remarkably successful in steaming. Her battery power may be observed from the table, which gives the number and size of guns, the muzzle energy of each shot, the number of shots per gun per minute and the collective muzzle energy of the shots in one minute:

		Foot-tons.	Shot.	Foot-tons.
4	12-inch	39,850	¾	119,550
4	8-inch	10,662	3	127,944
12	6-inch	4,840	5 1-3	309,760
16	3-inch	423	10	67,680
36			239	624,934

As the ship displaces 13,427 tons, it is seen that the total muzzle energy of her guns for one minute would be sufficient to raise her entire weight 46.5 feet, while the energy of a single discharge from all of the guns (266,896 foot tons) would raise her 19.9 feet.

Leon Guillet has published in the *Genie Civil* of Paris an elaborate paper on researches in vanadium steel.

The New York Foundry Foremen.

The regular monthly meeting of the New York branch of the Associated Foundry Foremen was held on Saturday evening in Jersey City, N. J. Transportation conditions being unsatisfactory as a result of the recent severe storm, the attendance was less than had been expected. Nevertheless the representation covered not only New Jersey foundries, but quite a number in New York City, Brooklyn, Hudson River towns and some on the Connecticut border. President Charles H. Thomas of New York occupied the chair. Secretary Sidney M. Williams of Elizabeth read a number of communications evincing not only well directed energy on his part, but much interest in the association's work by his correspondents. Some of the communications dealt with practical questions in foundry work. Others promised future contributions for the edification of the members. The first paper read was, "What Disposition Can We Make of the Rattle Scrap?" by Wm. Sickels. This paper brought out considerable discussion, during which numerous members gave their experience in using shot iron, showing great variations in practice, depending largely on the character of the product made by the foundry.

President Thomas read the following paper on "Pneumatic Tools in Foundry Practice":

"While the foundry the writer represents has not many up to date appliances, we are carefully working that way. Pneumatic tools can be applied to so many uses in the foundry that I will try and enumerate a few of the things that can be done with air and the tools that are convenient to use. Most of us have used or seen the sand blast for cleaning castings. It is a good thing to use when it is desired to remove the sand that adheres very closely to castings, leaving them a nice bluish color. There are some objections to the use of the sand blast, among which is the fact that it is hard to get men to operate it, owing to the very large amount of dust they are liable to inhale. There are respirators to place over the mouth and nose, helmets and goggles to wear, but it is not a very desirable job at the best. But men can be secured for money. More wages may have to be paid to a man who operates the machine than to the ordinary laborer, but he may be worth it.

"Next we come to the pneumatic chipper, with which one operator who understands the machine can trim more castings in a day than four men with hammer and chisel. There are some men so blind to any improvements or innovations that they object to the installation of any labor saving machinery, and they refuse to operate the chippers. Their places have to be filled by new and inexperienced men who must be educated to use the machine, but it pays to be persistent and success will finally crown efforts in this direction. I wish to say here, do not insist on a new beginner using the pneumatic chipper all day to start with, for if a foreman does so he will have one man less the next day. Rather let him use the machine five or ten minutes, followed by a rest of five or ten minutes, for the first hour. Then let him use the hammer and chisel the balance of the forenoon. Have him try again in the afternoon for an hour, but if the vibration hurts his arm do not insist on his keeping the machine in operation. Thus work him into it gradually. Try the chipper yourself, and see how long you can stand the jar, then use your own experience as a guide in determining how long another human being will be able to keep at it. By using the chipper a little longer each day the man finally becomes accustomed to it, and will prefer it to the hammer and chisel, for he can do a much nicer job in a shorter space of time, and, if he takes any pride in his work, he will prove a very valuable assistant in reducing the general foundry cost.

"With a foundry piped for air the acme of perfection to be desired in the foundry is reached. It can be used to clean out the molds in place of a bellows. It can be attached to a riddle. There are a couple of makers of pneumatic shaker machines, and as a tireless worker the machine cannot be beaten. Where a vibrator is needed on bench work the air should be run to the bench, the vibrator attached to the under side of the bench, a spring valve placed where the molder can press his knee against it, and he will get a perfect lift every time. There may also be some loose vibrators placed around among the light floors, and they may be used to advantage on heavy work where a good clean lift is desired. Having a hose at each bench does away entirely with the cost of buying bellows for the molder to throw on the floor and get broken or carried away by some of those who make it a business to confiscate everything loose in the shop, such as brushes, &c., that disappear nobody knows how and where.

"By having air piped all through the foundry a spray can may be used, the same machine being used to skin-dry work, thereby doing away with a large amount of unnecessary securing. Mix the blacking by using 6 or 8 parts of water to 1 part of molasses, adding enough black lead or plumbago to thicken to the consistency of thin cream. This can be determined by experimenting until the right mixture is reached suitable for the work. It may be necessary to go over the mold two or three times to secure the proper coating. It should be tried on small molds first, and it will soon be possible to get the mixture right every time. After having properly blackened the mold empty all the blacking from the spray can. Wash it out, being sure to remove all the water. Then fill the can with kerosene and light an ordinary torch or a piece of waste. Turn on the air gradually until a good spray is had, holding the spray to the flame of the torch until it ignites. Then proceed to skin-dry the mold, holding the flame so that it will not burn the surface of the mold, and in a surprisingly short space of time the mold will be perfectly dry. A little practice will put a man in shape to make clean, sound castings. Leave the drying until the afternoon. After drying the mold close and pour just as convenient. The longer it stands the more liable it is to draw dampness. I have used the spray very successfully on dry sand, blacking two molds in five minutes that by the old method of swab and slicking would have taken two and one-half hours. We used a spray can made in Cincinnati which cost $12, and we paid for it in four days in the saving of labor alone, to say nothing of what was saved in blacking. These cans can now be bought for $10 and are a good investment. There are many cheaper cans on the market that will answer the purpose, but I would prefer to use the larger one, which holds over two quarts, has two handles and is fitted with a valve so that the operator can control the supply of air, thereby getting just the desired amount of pressure to insure a perfect spray. We found that a pressure about equal to what a man would exert by expelling the air from his lungs was sufficient."

An animated discussion followed, principally on the use of chipping tools and spray cans. The claim was made that on cast iron pipe, especially soil pipe, more rapid work can be done with hammer and chisel than with a pneumatic chipper. Spray cans made of copper were decided to be preferable to the ordinary tin can, which soon corrodes.

Practical questions were propounded by some of the members, which brought out a great deal of interesting information relative to methods by which difficult pieces of work are handled. Observations were made relative to differences between Eastern and Western methods of foundry practice, which elicited lively discussion. The interest in the proceedings was marked. At no time was a lack of readiness shown to discuss a topic. The president terminated the proceedings by stating that it was time to "pour off," and an adjournment was taken to a convenient restaurant, where a collation was served.

Announcement has been made by the Carnegie Institution through its president, Dr. R. S. Woodward, of the award of a special grant of $2500 to Prof. Charles F. Burgess, of the department of electro-chemistry and electro-metallurgy of the College of Engineering of the University of Wisconsin, at Madison, with which to pursue his investigations on the property of pure iron and its alloys.

Rolls for Uneven Angles.—III.

BY WILLIAM HIRST.

Finishing Passes.

The ordinary angle is required to be rolled in various weights, therefore a design for a set of rolls to produce the section must provide means for rolling the bar of different thicknesses. Two methods naturally suggest themselves to accomplish this end—one to provide passes for each thickness (increasing by sixteenths), the other to increase the space between the rolls by spreading them apart. The first would be the most accurate method, but a very expensive one because of the number of different sets of rolls which would be required. The second, while increasing the thickness of the section, would also increase the length of the legs a like amount, because what is added to the thickness of one leg will be added to the length of the other; hence, with only one finishing pass, variations in thickness amounting to ½ inch would make the 6 x 3 inch angle under discussion measure 6½ x 3½ inches, an error sufficient to condemn the bar. To avoid either of these extremes an allowance of variation is made for the lengths of the legs by which a limit is established. From this limit the number of finishing passes is determined. For an extreme range of weights requiring thicknesses from ⅜ to ⅞ inch and a limit of variation in the lengths of the legs ¼ inch (⅛ inch more or less) it is possible to do with two finishing passes, making the thinnest section in each pass 5⅞ x 2⅞ inches and the thickest 6⅛ x 3⅛ inches. To do this one would be made 6 x 3 x ½ inch and the larger 6 x 3 x ¾ inch each to be closed ⅛ inch to make two sizes below and opened ⅛ inch to make the two sizes above. With this arrangement the medium weight may be made in either pass, but the larger would generally be preferred, because it requires only seven passes, whereas, working through the whole series is nine. If there should be available space three finishing passes might be used, 7-16, ⅝ and 11-16 inch, which would allow all the different weights to be made with a maximum variation in length of ⅛ inch, 1-16 inch greater or less than the size.

The foregoing are finishing passes only, their function being to regulate the final dimensions of the bar and, as their name implies, to put the smoothest possible finish on its surface. The actual work of forming and reducing the section is done in the roughing and stranding rolls, Figs. 16 and 17. In the latter the second set (Fig. 17), passes must be provided to lead into and to be of such relative size and capacity as to conform to the finishing passes. It is clear that one leader only in these rolls could not be made to do for both finishing passes, for the same reasons that one finishing pass will not do for all the different thicknesses required; hence two are arranged for this purpose. In the series these are the sixth and the eighth. As the sixth is used as one of the series with the eighth a special problem is here presented.

It will be noticed that the thickest section is the shortest on the inside of the leg, as compared with the thinnest, and if pass eight is to have sufficient length brought down to fill it pass six must be as long on the inside as pass eight. Making allowance for this brings the length of pass six longer than is required in the finishing pass for which the sixth is leader. To avoid the possibility of overfilling on this account we may arrange the draft so that when using pass six as a leader the rolls may be closed enough to reduce the outside length sufficiently to obviate the danger of finning when rolling heavy sections. The finishing pass for the light section may be left open at the ends of the legs—that is, there need be no shoulders on the collar forming the inside of the bar corresponding to its edges. This is practicable only when the leader can be made to give the finished length of leg required; but in the case of the finishing pass for the heavy section, when the lengths of the leader are somewhat longer for the reason given, the pass should be close so as to regulate the edges.

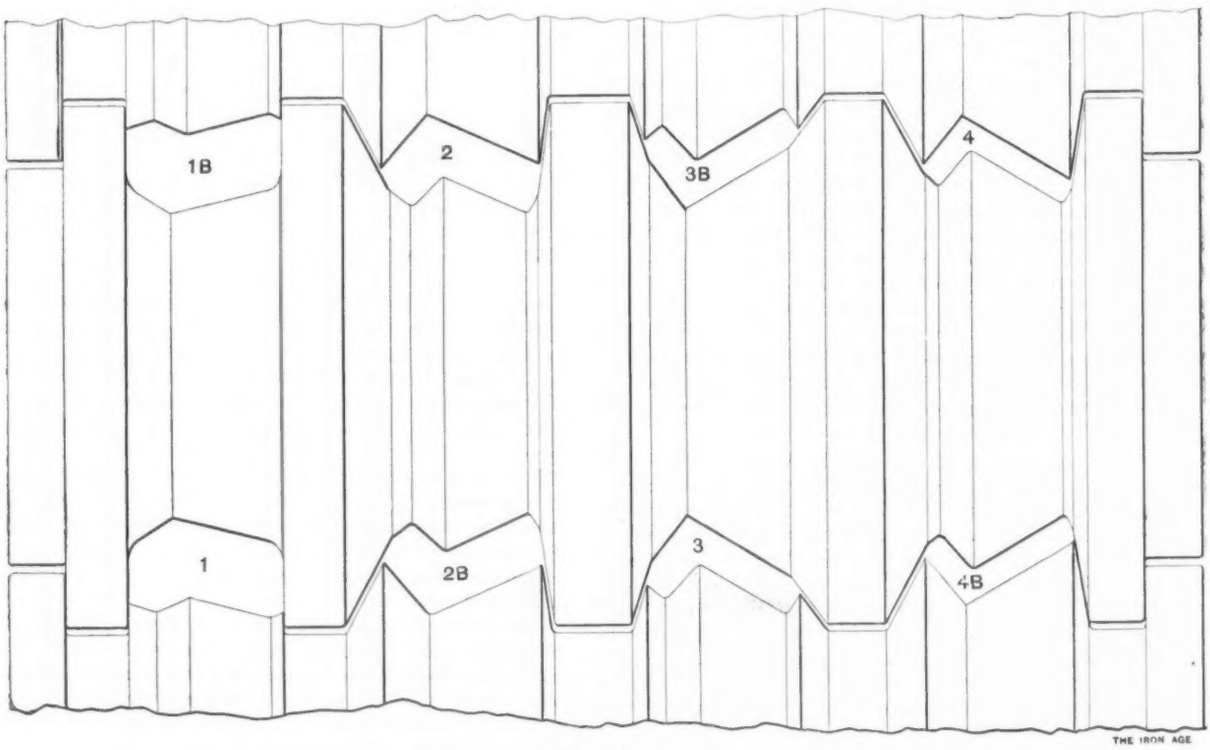


Fig. 16.

Forms of Passes.

In the forms of passes here shown a groove in one roll is closed by a projecting collar on the body of the one opposing, making what is termed a closed pass. On the lateral extremes of each pass two corners of the section must come opposite the space between the two opposing rolls. If these corners were kept sharp any draft at the open point of the pass would force the metal into the interstices between the collars and form fins. Whenever these extremities terminate at a point, as these forms of passes would if carried out, it is necessary to cut away the point and form two corners there, because where there is but one that one would come opposite the opening in every pass. In such a case that part could not be covered or inclosed by either of the rolls, and therefore no regulation would be possible.

When there are two corners on each side of the pass, however close they may be, one can be inclosed in the groove and rolled back sufficiently to relieve the draft at the opening in the next pass. That these corners may be alternately inclosed within the groove the passes are so arranged that one side of the bar, then the other, is in turn presented to the grooved roll. It will be readily seen by Figs. 16 and 17 that the three-high system lends itself admirably to this plan. In practice the entrant collar is the first to show wear, especially at its edges.

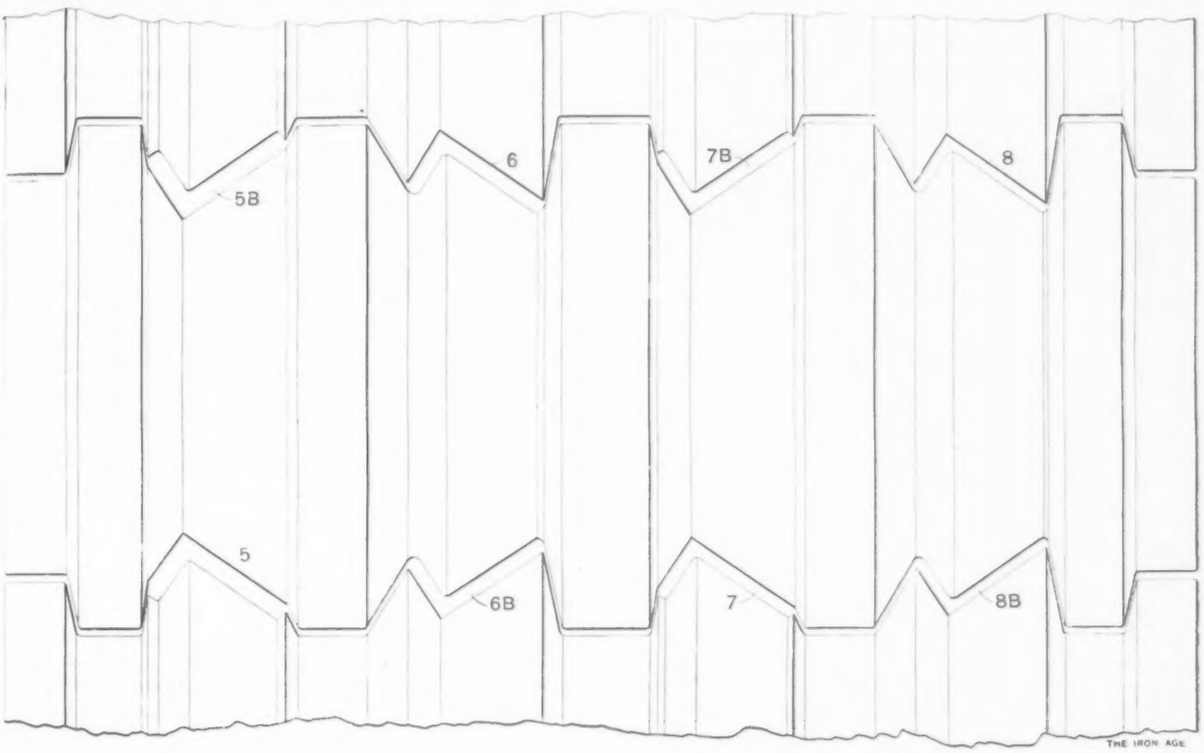


Fig. 17.

The more obtuse the corner of the collar is the more resistance it is capable of, at the same time decreasing its liability to crumble and break. In passes of this character, however, the corners of these collars cannot be made obtuse because of the necessity of having to form the double corner on the bar, as stated. To form these corners, instead of continuing the side of the pass straight out, the line is broken just before reaching the actual corner of the section and bent in, forming the two corners, as shown.

Bending in the side of the groove makes the corner of the collar an acute angle, which, as stated, is unavoidable in this form of pass. To be effective this bend should be considerable, but at the same time, however, the more the side is bent in the more acute the corner becomes. In practice a reasonable compromise seems to be a bend of 22½ degrees, which makes the working edge 67½ degrees. The flat corner formed by this bend is called the fillet, its function being to regulate the edge coming opposite the opening in the succeeding pass. This being its object, its size depends on the amount of draft in that pass. It is difficult to say just how large it should

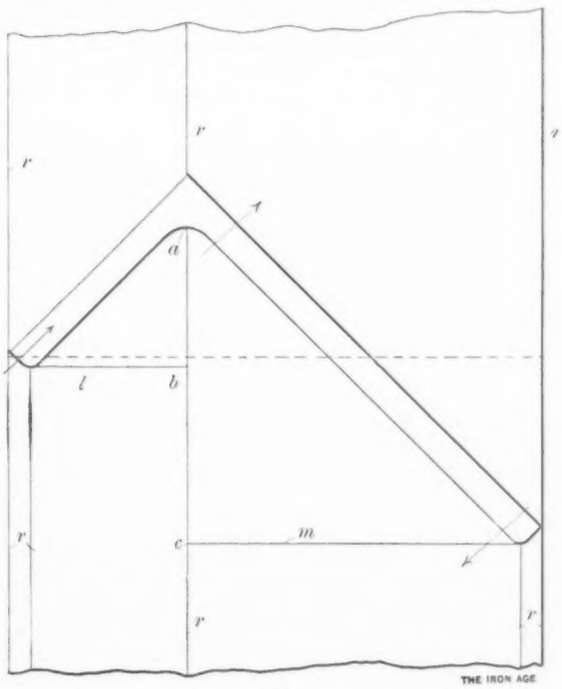


Fig.3

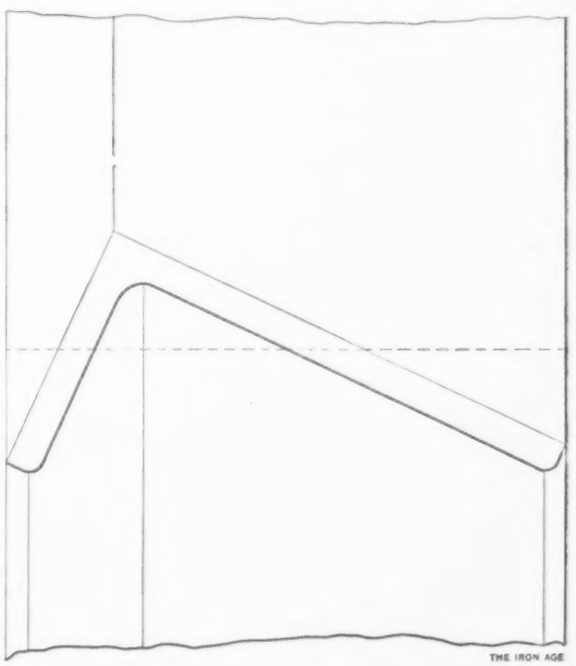


Fig.4

be. It should, however, be large enough to relieve the collar of the pressure on its corner, which is illustrated most clearly in passes 1, 2, 3 and 4 in Fig. 16. As stated, the object of the fillet corner is to regulate the edge which in every other pass comes opposite the opening.

To effect this alteration in two-high systems the bar must be given a half turn, unless the order of the roll collars is reversed for each pass. In other words, if the bottom roll is the grooved roll entirely the bar must be turned over; if the grooves are turned alternately in the top and bottom the collars, or, in effect, the pass, are reversed instead of the bar. In three-high systems the top and bottom rolls are generally of the same character—that is, they are collar rolls or they may be grooved rolls. By passing the bar between the top and middle and the middle and bottom alternately each face of the bar comes in the groove, which, it will be seen by reference to the illustrations, is the one in which the fillet corners are formed. For reasons hereinafter to be explained the middle roll is made the grooved roll and the top and bottom rolls are made collar rolls, which are duplicates.

By Figs. 3 and 4 the importance of setting a pass so that the opposing diameters may have the least untoward effect on the alignment of the bar as it leaves the rolls is shown. Accepting the advantages as demonstrated, we tentatively set the pass in the position shown in Fig. 14, in which the horizontal line is, as in Fig. 15, parallel to the axes of the rolls. In Fig. 14 the slowest moving points in the pass have exactly the same speed—that is, the roll surfaces at the edges of the bar and at the point have the same diameter.

As stated in the beginning of this part, these rolls must be designed to produce the various weights required, and therefore must be so arranged as to be separated—spread apart—to increase the thickness of the pass. To do this in whatever position the pass may be set the rolls must be moved apart on the line A B, Figs. 14 and 15. The position of Fig. 14 would bring this line about 20 degrees from the vertical—the line at right angles to the axes of the rolls. This makes the angle of the short leg 65 degrees, and, as the side of the pass is bent in 22½ degrees further to form the fillet corner, the angle is increased to 87½ degrees, which would barely allow sufficient taper to free the bar.

If the passes were all set in the rolls in the position of Fig. 14, that is to say, all leaning the same way, the movement of the rolls apart would be simple and no special provision therefor would be required. In a pair of two-high rolls it would be necessary to turn the bar over at each succeeding pass or turn the passes themselves over alternately. In either case the effect is to make every other pass lean in the opposite direction. In three-high systems the successive passes are, in effect, inverted, and these angles are thereby transferred from E D to D C on the left, and from C D to D E on the right. The effect assembled is shown in Figs. 16 and 17.

In Figs. 14 and 15 the angles E D and D E are the same in their relation to the rolls as are C D and D C.

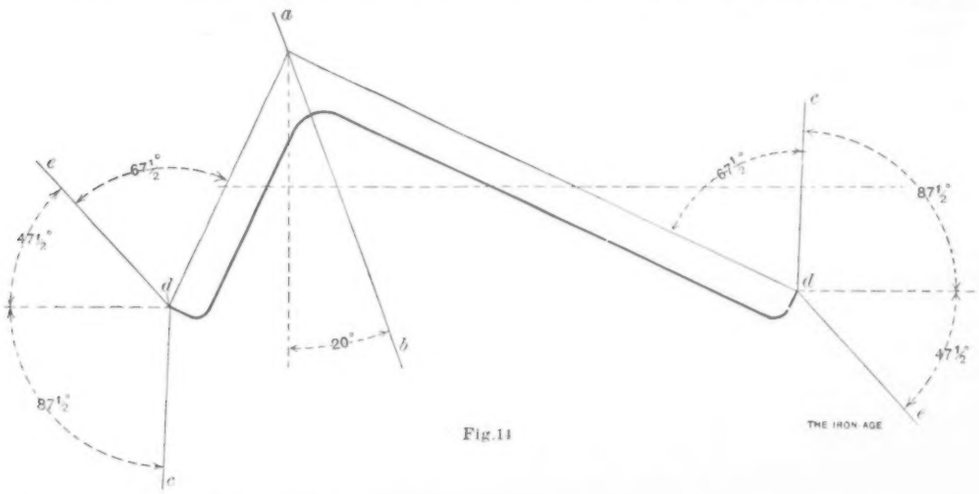


Fig. 14

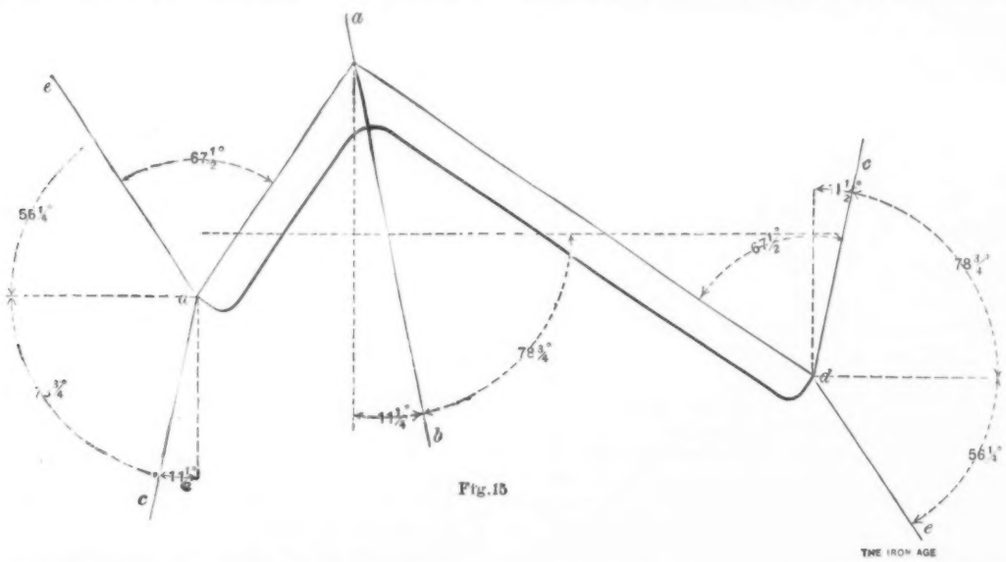


Fig. 15

It will be seen, therefore that if the passes were set in the rolls in the position as indicated by Fig. 14 the movement of the bottom roll of Fig. 17 to the right, for example, to adjust passes Nos. 5 and 7, would be blocked by the right side of the forming collar in Nos. 6 B and 8 B, which are two unused or blank passes. As just stated, the rolls must move apart on the line A B, referring to the section; it follows, then, that no taper on the sides of the grooves should be of less degree. The natural and easy solution of the problem is therefore to make C D and D C of the same inclination from the vertical line, which is done in Fig. 15.

(To be continued.)

An Investigation of the Properties of Zinc Coatings.

An interesting paper under the above title is published in the *Electrochemical and Metallurgical Industry*. The author is Prof. Charles F. Burgess of the University of Wisconsin, who gives the results of an investigation undertaken in the laboratory of applied electrochemistry of the university to determine if possible the relative value of zinc deposited by the electrolytic or cold processes and the metal as applied by the hot or dipped methods. It is stated that the determination proved to be somewhat difficult and unsatisfactory, since it involved the devising of methods for determining the properties of zinc coatings, and at best such methods can be only approximations. Many trials were made for the purpose of determining the most satisfactory acid to use in the tests of zinc coatings and the most suitable strength of such acid for the production of uniform and comparable results. For these tests was adopted a solution of two-thirds normal (that is, 3.2 per cent.) sulphuric acid, to be used at room temperature, as the corroding agent to be employed. The reason for adopting this strength of solution was that the corrosive action was sufficiently rapid to enable a measurement to be made within a reasonable time, not greatly exceeding one hour. The method employed for conducting the tests was as follows:

Thin sheet galvanized iron was used in most cases. From this test samples were cut having dimensions 2 x 5 inches. Each sample was scoured with Vienna lime to remove any dirt or grease which might interfere with the action of the corroding solution. The sample was carefully weighed and then immersed in the sulphuric acid solution and left for a certain definite period, after which it was removed, rinsed, brushed, dipped in alcohol, dried and again weighed. The loss of weight thus obtained gave an indication of the rapidity of corrosion. These dips were repeated until all the zinc had been removed, or until it had been removed sufficiently to determine its relative resistance to corrosion.

A method was also devised for determining the degree of adherence of zinc coatings, which consisted in soldering to the zinc surface, by means of a low melting solder, a copper plug ½ inch in diameter. By noting on a spring balance the pull necessary to separate this plug from the iron a measurement of the adherence of the zinc to the iron is made. The zinc adheres by means of the solder to the brass plug with a greater strength than to the iron.

The tests for resistance to corrosion were numerous, and it was found that the amount of zinc applied by the hot process is about 25 to 28 grams (1 ounce) per square foot, and the electrolytic coatings used ranged from 8 to 34 grams per square foot. The tests showed that the hot process zinc was in all cases completely removed in less than one hour's time. The electrolytic coating of the same thickness stood about 500 minutes' immersion.

A suggested explanation for the remarkably favorable showing of the electrolytic zinc over zinc deposited by the hot dip is that the hot galvanized has a certain amount of impurity in the form of iron, lead and other materials and is therefore an alloy. Such an alloy will dissolve very rapidly in an acid solution, owing to local action which is set up between the particles of the different metals.

The tests for the degree of adherence of zinc coatings, as carried out in the manner previously described, show that it takes almost twice as great a force to separate the electrolytic zinc from the iron as it does the hot galvanized.

Following are the conclusions arrived at by these tests:

The principal fact brought out in these investigations is that, with the corroding agent adopted, electrolytic zinc has resistant properties far superior to zinc applied in the molten condition. It may, with some justice, be inferred that a like relationship will hold when natural corroding influences prevail. To prove without question the exact value of this test will require observations covering some years.

The results of measurements enable us to specify what dimensions an electro coating shall have to compete favorably with the other coating. It is found that for equal durability the electro zinc should be present in an amount equal to about 12 grams per square foot, requiring about 10 ampere hours for its deposition. To attain the advantage of great durability the electrolytic coat should be as thick as the hot galvanized deposit, or about 28 grams per square foot. This can be produced by 28 ampere hours or 14 amperes per square foot for two hours.

It seems that to obtain the best quality of coating the disadvantages of the electrical method are brought out, the principal one of which is the great length of time required to apply the deposit. This can be remedied only by the use of high current densities, and with solutions at present available it seems impracticable to run the density beyond 18 or 20 amperes per square foot on account of the liberation of hydrogen and undesirable physical quality of the deposit produced. In the tests made 14.4 amperes per square foot was taken as best representing practical conditions where a cold, unagitated solution is used. With this current density the metal may be deposited with a current efficiency of nearly 100 per cent.

A serious limitation upon the electrolytic process as at present applied is that after the coating has reached a certain thickness there is a tendency for it to become rough and crystalline, and this tendency makes it extremely difficult to apply a coating having more zinc than 30 grams per square foot.

A great difficulty lies in securing an even distribution of current over the object being plated, as demonstrated on corrugated sheet iron and other irregularly shaped articles. This causes also greater thickness and roughness around the edges.

The tests of durability show that the best results are attained with solutions operated as nearly neutral as possible, and that the addition of free acid, which seems desirable for keeping a clear solution, not only decreases the current efficiency but also materially reduces the efficiency of the zinc as a protection.

There seems therefore abundant opportunity for improvement in zinc plating solutions, even though present methods are giving good results industrially. Such improvements may come through the discovery of new compositions for the bath, which will enable higher current densities to be used, thicker deposits to be obtained and greater stability and uniformity of operation acquired. Circulation has been suggested as an improvement, and it is to be expected that the advantages which efficient agitation gives in copper depositions may also be realized with zinc plating vats.

The adherence of zinc coatings to iron is frequently ascribed to an alloying which is supposed to take place. The tests for adherence indicate that no such alloying occurs, either with hot or electrolytic galvanizing, since the tenacity with which the coatings adhere is far less than would be expected if alloying existed.

The annual meeting of the Engineers' Society of Western Pennsylvania was held in Pittsburgh on January 24. E. K. Morse was elected chariman; Robert A. Cummings, vice-chairman; T. J. Wilkerson, secretary, and T. B. Lynch and Charles Worthington, directors. Frank Rice presented a paper on "Methods of Expansion in Railway Bridges," and E. K. Morse a paper on "Cushioned Road Beds for Railroad Bridges." The annual dinner was held at the Hotel Schenley on January 28, the occasion marking the twenty-fifth anniversary of the organization of the society.

Thomas Lynch, president of the H. C. Frick Coke Company, has been elected president of the Masontown & New Salem Railroad Company and the Huron Water Company, both of which are allied with the United States Steel Corporation. C. P. Parker and Earl Miller of Pittsburgh have been elected secretary and auditor, respectively, of the same companies.

Technical Periodicals in the Office and the Factory.

The up to date manager knows that it pays to keep his subordinates growing and well informed, particularly in the line of their several activities. He is therefore well pleased to have his employees take and read the periodical literature of the branch of trade or industry in which they are engaged. For most men, however, especially those most in need of such helps, which is to say those youngest in the business, it is a serious drain to take several such periodicals. They are necessarily higher in price than popular periodicals, because of their more limited field, and not many can afford to subscribe for more than a very few at the most. Many progressive managers are therefore coming to the conclusion that it is a paying proposition to put into the hands of their employees a considerable number of technical periodicals, so they can keep themselves thoroughly informed as to the progress being made in their branch of industry, and they set aside a sum sufficient to meet the reasonable needs of their establishments in this respect.

The amount of money required for subscriptions will of course vary with the size of the plant and the nature of the industry. For some plants a very small sum would be sufficient. A few publications of a somewhat general nature are desirable for every periodical library, and as for the rest, they will necessarily conform to the activities of the plant. Following is a list which is used in a large factory manufacturing agricultural machinery and which may be suggestive:

American Blacksmith, American Machinist, Bookkeeper, Cassier's, Compressed Air, Draftsman, Electrical World and Engineer, Electricity, Engineering Magazine, Engineering News, Engineering Record, Electrical Review, Farm Implement News, Farm Implement Age, Foundry, The Iron Age, Iron and Steel Magazine, Iron Trade Review, Machinery, The Metal Worker, Modern Machinery, Patternmaker, Power, Scientific American, Scientific American Supplement, Social Service, System, Technical World, Woodworker, and *Western Painter.* Of some of these two, and in some cases four, copies are taken. The list, it will be perceived, makes provision for almost every possible class of workers.

In order to make such a list of periodicals useful in the greatest degree it is necessary to provide some means of getting them into the hands of those interested in them and of preserving them for future reference. In the place previously referred to a very successful system is in use for doing this. Because it has been so useful—and in this case the results are evidently profitable—the writer passes it along for the benefit of others.

Publication Iron Age Price $5.00

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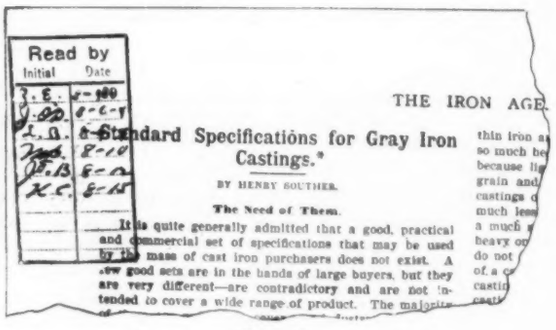
Period of Subscription ___ to ___ Copies ___

Issues Received.

190[illegible]	Jan. 3 - [illegible] - 17 - [illegible] - 31	190	Jan.
	Feb. 7 - 14 - 21 - 28		Feb.
	Mar. 7 - 14 - 21 - 28		Mar.
	April 4 - 11 - 18 - 25		April
	May 2 - 9 - 16 - 23 - 30		May
	June 6 - 13 - 20 - 27		June
	July 4 - 11 - 18 - 25		July
	Aug. 1 - 8 - 15 - 22 - 29		Aug.
	Sept. 5 - 12 - 19 - 26		Sept.
	Oct. 3 - 10 - 17 - 24		Oct.
	Nov. 7 - 14 - 21 - 28		Nov.
	Dec. 5 - 12 - 19 - 26		Dec.

Form 1.


Read by
Initial Date
THE IRON AGE.
Standard Specifications for Gray Iron Castings.*
BY HENRY SOUTHER.
The Need of Them.
It is quite generally admitted that a good, practical and commercial set of specifications that may be used by the mass of cast iron purchasers does not exist. A few good sets are in the hands of large buyers, but they are very different—are contradictory and are not intended to cover a wide range of product. The majority

Form 2.

Subscriptions are placed, usually through some agency, for the complete list desired, beginning in most cases with the first of the year. When so placed cards are prepared like Form 1, giving all necessary information about the periodical itself and indicating the times when it is to be received, or, rather, the dates of issue. As the copies come in the appropriate dates are checked off, and the magazine is read by the person in charge of that work and marked for indexing. Every article or extract that seems of particular interest to any one, or which covers a topic upon which some one has desired to be kept posted, is indexed, and those especially interested are notified on a blank used for that purpose. The stamp used for marking is shown in Form 2. Those reading the article are expected to indicate the fact by writing their initials in the spaces left for that purpose.

In order to obtain a basis for the indexing an inquiry is made of all whom it is desired to include in the regular patrons of the periodical library asking for lists of topics of particular interest to each. Form 3 is used for this purpose. It is found that many of those of whom inquiry is made will have little idea as to what would interest them. It is therefore important that the person in charge of this work be himself a man of wide information and preferably well acquainted with the needs of the different departments. A boy can easily do the clerical work, but to get good results there should also be some head work by some one competent to do it.

The replies to Form 3 are classified, and as articles relating to any of the topics concerning which inquiry was

made are indexed, the names of those interested are placed on the back of the index cards and the persons notified from time to time. The index card and back

LIBRARY DEPARTMENT.

_____ 1905.

Mr._____

Kindly indicate on the back hereof such general topics as are usually treated in technical and trade journals which are of interest to you. From time to time you will be notified of articles appearing in such periodicals as we receive, touching the subjects you may indicate an interest in. Such articles will then be sent you on request, or they may be consulted in the Library.

Yours truly,

_____ Librarian.

Form 3.

are shown in Forms 4 and 5. The notices calling attention to particular articles are like Form 6. The record of the periodicals so taken or sent out is kept on Form 7.

Topic *Apprentices*

Article	Publication	Issue	Page
1. "Instructing Apprentices"	Iron Age	6/11/03	38
2. "Brown & Sharpe System of A."	"	"	48
3. "Defending & Encouraging the A."	Amer. Mach.	5/1/02	633
4. Apprenticeship in Machine Shops	Iron & Rail.	7/2/03	80

Form 4.

Certain employees will be interested in many lines, and it would be both inconvenient and unnecessary to keep notifying them of everything that would be likely to

MEMORANDA

Notified	Articles	Date
Aiken	1, 2, 3, 4	6-12-03
Wood	1, 2	6-12-03
Elliott	1, 2, 3, 4	6-12-03

Form 5.

interest them; and, besides, there would be in certain periodicals many items of interest that would not be very likely to catch the eye of the indexing reader as important. It is therefore desirable to send to such employees all the issues of the journals covering their lines of interest, and to do this regularly. To make it certain that all the journals reach all that desire them, and that in a reasonable time, it is necessary to arrange some method of forwarding and checking them. If a journal is merely sent to one man with the request to forward it to the next on a list there are sure to be many delays and not a few losses, so that those at the end of the line will not get much benefit. In every large concern there is, or should be, a mail service for internal communication. This makes it a very simple matter to keep the magazines going to the proper persons until they have gone the rounds.

For the above purpose a mailing list is kept. Each periodical has a set of cards (Form 8) on which are the names of those who are to receive that particular periodical. The cards may be arranged in any order desired. Perhaps as good a way as any in the beginning is the alphabetical order. The order of the cards in the list may be varied at any time, of course; and if the method of punishing delinquents is used which in this establishment has been found useful the order will be continually changing. Often the receiver is careless about returning the magazines promptly within the two days specified on the slip attached to the cover (Form 9), and therefore delays its receipt by all following him on the list. To discourage this practice a notice is sent to the delinquent if the delay is more than a day or so, and at the same time his card is set behind the next following one. A persistent delinquent thus finds himself in a short time at the end of the list, where he does least harm. As the cards are handled once a day at least it is no additional trouble to catch the delinquents. If a magazine is wanted for a longer time than two days the matter can be easily arranged. Anyway, it will be available after going the rounds and being filed for reference.

The mailing list is a natural growth. As new men

come in they are of course notified of the periodical library, and select what they wish to receive regularly. If additional or different journals are taken all concerned are notified of the fact, as shown in Form 10.

The card index of subjects is a valuable part of the system. After it has been kept up for some time it is quite certain to contain a considerable number of references on practically every subject that is likely to come up in the shop, and in the consideration of new propositions there will usually be available considerable pertinent matter for quick reference. O. M. B.

LIBRARY DEPARTMENT.

Works, JAN 19 1905

Mr. G. W. Aiken

Your attention is directed to the following articles, some or all of which may be of interest to you. The same may be had from the Library on request, or may be consulted in the reading room.

R. T.
Librarian.

Subject	Publication	Date	Page
"Instructing apprentices.	Iron Age	6/11/03	38
"Brown & Sharpe System of Apprentices		6/11/03	40

Form 6.

CHARGED OUT

Publication Iron Age

Name	Issue	Taken	Returned	Notice Sent
E. E. Hagberg	7/12/04	JAN 13 1905	JAN 13 1905	
R. G. Brooks	4/7/04	JAN 13 1905	JAN 15 1905	
F. O. French	1/12/05	JAN 14 1905		

Form 7.

With a total of nearly 13,000 miles of track laid on the railroads of the United States in 1887, an almost continuous decrease in the yearly additions was observed until 1895 showed only 1803 miles. From that point the increase has been continuous to 1903, with 5786 miles, except that 1900 fell behind 1899 by about 150 miles; 1904 shows another decrease to about 4000 miles. At the close of 1903 the total main track mileage of the United States was 207,784 (Poor's Manual). The additions during the year will bring the present total to about 212,000 miles.

The Wheatstone system has been in operation during the past year over the full length of the Indo-European Cable Company's line. This route starts at London and terminates at Teheran, Persia, a distance of some 3800 miles. Recently the messages coming into London have been relayed direct to Liverpool and Manchester without being retransmitted by Morse, and are received as clearly as in London.

Customs Matters and Decisions.

Two incidents last week are taken by persons familiar with conditions in the customs service to indicate that the old fight between the Treasury Department and the Board of United States General Appraisers as to the independence of the board is about to be revived.

Judge Hazel of the United States Circuit Court, sitting in Buffalo, last week handed down a decision affirming the board's independence in a suit involving the imposition of duties for repairs to American vessels made abroad. The vessels ply between Charlotte and Ogdensburg, N. Y., and Canadian ports, and were repaired in Kingston, Ont. On their return to their home ports the collector at Rochester imposed the usual duty of 50 per cent. of the cost of the repairs on them, and included in it the cost of docking at Kingston. The owners protested against the imposition of duty on the docking charges, claiming that they did not properly constitute a part of the cost of repairs, and they were sustained by the Board of General Appraisers. The Government appealed to the Circuit Court, alleging that the matter was entirely outside of the jurisdiction of the board, as repairs to vessels were not imported merchandise. Judge Hazel rules that the board is an independent court, having jurisdiction over everything connected with the imposition of customs duties, and sustains its decision in the case under consideration.

The other incident was a rebuke administered by General Appraiser Eugene G. Hay to the Assistant Secretary of the Treasury for overstepping his powers. E. W. Miller of St. Louis filed a protest with the board against the imposition of duty on certain articles, which he claimed

were personal effects and therefore free. On the date set for hearing he did not appear, but sent a letter asking permission to withdraw his appeal, on the ground that the relief he asked had already been granted by the Assistant Secretary of the Treasury. Mr. Hay declares, in his opinion, that he is unaware of any power that the Assistant Secretary has to decide a case that is before the board, and overrules Mr. Miller's protest for lack of evidence.

Mailing List

No. 1. Publication Iron Age

Name Fred. Munmelthy Dept. 8

Issue	Sent	Returned	Notice	Issue	Sent	Returned	Notice
Dec 1/04	12/3/4	12/4/4					
Dec 8/04	12/10/4	12/11/4					
Dec 15/04	12/17/4	12/18/4					
Dec 22/04	12/25/4	12/26/4					
Dec 29/04	12/31/4	1/3/5					
Jan 5/05	1/7/5	1/8/5					
Jan 12/05	1/14/5	1/15/5					
Jan 19/05	1/21/5	1/22/5					

Form 8.

Return within two days

Do not detach

~~JAN 11 1905~~ ~~JAN 12 1905~~ ~~JAN 13 1905~~ ~~JAN 14 1905~~ ~~JAN 15 1905~~ ~~JAN 16 1905~~ ~~JAN 17 1905~~ ~~JAN 18 1905~~ ~~JAN 19 1905~~ JAN 20 1905

Form 9.

Important changes in customs administration may result if the sugar trust and other importers of sugar are successful in 65 suits which they began January 28 against Collector Stranahan of the Port of New York, in which they attack the power of the Secretary of the Treasury to make regulations for the enforcement of the tariff law, on the ground of constitutionality. The suits involve the duties on nearly 20,000 importations of sugar, or practically all the sugar imported under the Dingley law. They are a revival of the famous sugar test cases which have been before the courts for the last seven years and in which the importers have been defeated. In reviving them, however, the entirely new question of constitutionality is raised, and its importance lies in the fact that if the importers are successful the same principle can be applied to almost every regulation of the Treasury Department. Under the Dingley law duty is levied on sugar at various rates according to its saccharine quality, and the law provides that this quality shall be ascertained by the polariscopic test. Acting under regulations promulgated by the Secretary of the Treasury the appraisers have been using the scientific method in making this test in which corrections are made for temperature, humidity and other conditions. The importers contend that the commercial method, by which sugars are bought and sold and in which no such corrections are made, should be used, and they declare that because of the method in use they have been compelled to pay millions of dollars in duties for which they were not justly liable. The issue which they raise now is that the Secretary of the Treasury in prescribing the method by which the test was to be made exceeded his constitutional powers and usurped the legislative functions of Congress. In suits where a constitutional question is involved an appeal can be taken direct to the Supreme Court from the Circuit Court without the intervention of the Court of Appeals, and the Supreme Court must hear the argument. It is expected that in this case a formal verdict against the importers will be given by the Circuit Court and that an appeal will be taken at once to the Supreme Court, where the matter will be fought out. A somewhat similar issue was raised a few years ago by the importers of tea, who disputed the Secretary's power to make regulations for the examination of tea, but they were defeated.

Works, JAN 14 1905

Mr. R. F. Fluterman

The Library is now receiving Iron & Steel Magazine regularly every Month. This periodical may be consulted in the Library, or, if desired, you will be placed on the mailing list and the same sent to you as received.

P. J.

Form 10.

The Board of General Appraisers on January 26 over-

ruled a protest by O. G. Hempstead & Son, Philadelphia, in which it was claimed that radium bromide and radium barium bromide were metals unwrought and dutiable at 20 per cent. Mr. Lunt ruled that the merchandise in the condition imported was a chemical salt, and as such was dutiable at 25 per cent.

On January 27 the board sustained a protest by Nanz & Co., New York, against the classification as manufactures of metal at 45 per cent. of so-called time detectors. He ruled that the movements were dutiable as watch movements at various specific rates according to the number of jewels plus 25 per cent., and the cases separately at 40 per cent.

A protest by D. S. McMullen, Chicago, against the classification as manufactures of metal of parts of a machine which had been advanced beyond the stage of castings by boring and machining, was overruled on January 28. The importer claimed that they were dutiable at 8-10 cent a pound as castings.

A protest by the Royal Metal Mfg. Company, New York, against the classification as jewelry at 60 per cent. of small metal coin holders made in the shape of hunting case watches, was sustained. It was decided that they are not jewelry, but articles of utility, and are dutiable as manufactures of metal at 45 per cent.

The Trade-Mark Bill Passed by Congress.

WASHINGTON, D. C., January 31, 1905.—The Bonynge Trade-Mark bill was passed by the Senate on the 27th inst. and will be signed by the President within a few days. The general features of the bill as passed by the House have been described in this correspondence. On reaching the Senate committee a hearing was granted to a number of leading experts in patent and trade-mark law who desired to present a series of amendments tending to strengthen the bill. The attention of the committee was drawn by these experts to the great importance of inducing manufacturers to register all their marks in the Patent Office with a view to providing a complete record therein for consultation.

The Registration of Old Trade-Marks.

In this connection Section 5 of the Bonynge bill was amended by the House committee so as to permit the registration of trade-marks "in actual and lawful use for 10 years prior to the passage of this act." Trade-mark owners will thus be able to protect their common law trade-marks under the new statute and to prevent others from unwittingly adopting them. It is a well-known fact that a portion of the trade-mark ligitation with which the courts have been occupied in recent years has been due to the inadvertent duplication of marks which were not of record in the Patent Office. In such cases large sums of money have sometimes been spent in the advertisement of trade-marks by innocent infringers. Occasionally after the investment of considerable capital has been made these parties have been disposed to stand on any technical legal rights they may have possessed as the result of any slight difference between the two marks.

This section was amended by the Senate committee in several important particulars. The experts who addressed the Senate committee suggested that controversies might arise as to whether certain marks, although in use 10 years or more, would come within the new statutory definition of the term "trade-mark." Having been long in use such marks would be entitled in equity to protection whether technically within the definition or not, and the committee was therefore urged to strike out the word "trade." It was further pointed out that the term "in lawful use" would make it necessary for the Commissioner of Patents to rule upon the question of the legality of the original adoption of the mark for which registration was sought, whereas this provision of the bill was intended to relate to *prima facie* matters only. The committee adopted these suggestions, and this provision of Section 5 was amended to read as follows:

And provided further, that nothing herein shall prevent the registration of any mark used by the applicant or his predecessors, or by those from whom title to the mark is derived, in commerce with foreign nations or among the several States, or with Indian tribes, which was in actual use as a trade-mark of the applicant or his predecessors from which he derived title for ten years prior to the passage of this act.

Other Amendments.

The point was made that the term "fac-simile" as employed in Section 2 as a representation of the trade-mark sought to be registered is too narrow to be used in that connection. "Fac-simile" has come to mean an exact reproduction of an original, while the courts have uniformly held that a trade-mark owner is not limited to a minutely exact reproduction of the device constituting his mark. The Senate committee was urged to strike out the word "fac-simile" and insert the word "drawing," and this has been done.

The Senate committee made an important change in the schedule of fees, increasing the charge for the renewal of the registration of a trade-mark from $5 to $10. The text as passed by the Senate is as follows:

Section 14. That the following shall be the rates for trade-mark fees:

On filing each original application for registration of a trade-mark, $10; provided, that an application for registration of a trade-mark pending at the date of the passage of this act, and on which certificate of registration shall not have issued at such date, may, at the option of the applicant, be proceeded with and registered under the provisions of this act without the payment of further fee.

On filing each application for renewal of the registration of a trade-mark, $10.

On filing notice of opposition to the registration of a trade-mark, $10.

On an appeal from the examiner in charge of trade-marks to the Commissioner of Patents, $15.

On an appeal from the decision of the examiner in charge of interferences, awarding ownership of a trade-mark or canceling the registration of a trade-mark, to the Commissioner of Patents, $15.

For certified and uncertified copies of certificates of registration and other papers, and for recording transfers and other papers, the same fees as required by law for such copies of patents and for recording assignments and other papers relating to patents.

Law Takes Effect April 1.

Trade-mark owners should bear in mind the date fixed by the Senate committee for the taking effect of the new law. The bill as it went through the House provided that it should go into force "upon its passage." It was believed, however, that a few weeks' notice should be given, and, in view of the adjournment of the present Congress on March 4, it was suggested to the committee that the bill take effect on April 1 next, a suggestion that was promptly adopted.

The question of the constitutional power of Congress to pass a trade-mark law covering commerce between the States was very carefully considered by the Senate committee. The House report was closely scrutinized and the Senate committee was convinced by the citations contained therein and by the text of the report of Thomas Jefferson to the Second Congress, recently referred to in these dispatches, that the subject is one clearly within the scope of the Federal jurisdiction. W. L. C.

When lead covered electric cables are laid in sand moistened with coal tar there is no deterioration of the sheath, while the reverse is the case with cables laid in solid bitumen, according to a writer in the *Electrical Times*. He attributes this difference to the fact that the tarred sand compresses firmly about the sheath, thereby excluding both air and moisture, whereas the bitumen does not adhere to the lead, and tends to crack under the influence of vibrating shocks, thus giving free passage to the air and moisture. Cables laid as long ago as 15 years in sand moistened with coal tar have given no trouble whatever, while lead covered cables laid in solid bitumen have been a source of constant annoyance. It appears probable that a crack once started in bitumen reopens repeatedly, resulting in the ultimate development of a crack in the lead sheathing.

At the twenty-fifth annual dinner of the Engineers' Society of Western Pennsylvania, held in the Hotel Schenley, Pittsburgh, January 28, a chest of silver was presented by the society to Prof. A. E. Frost, who has been treasurer since its organization.

Notes from Great Britain.

The Birmingham Quarterly Meeting.

LONDON, January 21, 1905.—The Birmingham quarterly meeting, held last week, was uncommonly well attended, and the tone of business was more buoyant than anything which has been noticed for at least a year and a half past. Many of the merchants in attendance found to their surprise that they could not place all the business with which they came provided, manufacturers being unwilling to overburden their books in a rising market. On both home and export account inquiries were very active, and to secure early deliveries many consumers were glad to pay any price asked. Advances were declared of 5 shillings in common bars and common strip, and though quotations remain nominally unaltered in other branches more money has to be paid to secure the acceptance of business. In black sheets, for instance, no new orders will be booked at under a half crown advance, and renewals at late contract figures cannot be effected anywhere.

Rates for the new quarter open at £8 for marked bars and best hoops, £7 10s. for second quality bars, £9 for boiler plates, £8 5s. for best tank plates, £6 to £6 5s. for common bars, £10 10s. to £10 15s. for best sheets, £9 5s. to £9 10s. for ordinary stamping iron, £8 for working-up sheets and £7 to £7 5s. for galvanized doubles. The rate for galvanized roofing iron of 24-gauge is from £10 15s. to £11 in bundles at ports. Tin plates of Midland make command 21 to 25 shillings and tinned sheets 27 to 29 shillings per hundredweight box. Makers of both have booked good orders from foreign merchants. In steel, bars are £6 5s.; billets, £4 15s. to £4 17s. 6d.; angles, £6 5s.; channels, £6 7s. 6d.; plates, £6 10s., and soft sheets, £8.

The Market.

The result of the negotiations during the past fortnight has been favorable, at least so far as the sellers of raw material are concerned. There have been large pig iron contracts placed, and the output of the furnaces is now very well sold for some time ahead. To some extent, buying seems to have been speculative. The influence of a rising market seems to have brought out consumers in a hurry to cover their possible requirements, and, having done so, there now seems very little anxiety to specify in proportion to the extent of the contracts. An unsettling influence was added to these conditions by the weakness apparent in the warrant market. For the present pig iron quotations may be regarded as largely nominal; sellers are not inclined to depart from them, and buyers are not anxious for further deals at such levels.

Somewhat similar conditions prevail in respect to raw steel. Here also consumers have very liberally covered their requirements, but there is this difference as compared with pig iron—the German coal strike is strengthening the British market. If that dislocation continues, any apprehension there may be concerning German competition—and there has not been very much for some time—will be quite removed, and British steel makers will be able to go ahead with their quotations without much fear of letting in the foreigner. German beams are about 1 shilling to 1 shilling 6 pence dearer than they were a week ago. Belgian beams are similarly advanced. The position is consequently most interesting in regard to both pig iron and steel. Less favorable views, however, prevail concerning finished iron. Perhaps manufacturers are too eager, but at any rate they cannot get specifications as freely as they desire, and they are inclined to grumble. Even allowing for all this, however, the fact remains that the industry is in a much better state than it was at this time 12 months ago.

The advance in pig iron quotations, together with the more sanguine views entertained concerning the future has caused coke to be quoted about 1 shilling per ton higher, though of course the amount of advance varies according to the nature of the expiring contracts.

In London metal circles the outbreak of serious labor troubles in the German coal mining districts has generally been quietly discussed. Some unsettlement has been created thereby among speculative operators, but should the disturbances prove to be of a protracted character it is generally considered that the position of the iron and steel manufacturers in this country could only be strengthened by the strike.

Sheffield Crucible Steel Industry and Foreign Competition.

Considerable interest is evinced in Sheffield in an article by Prof. J. O. Arnold, on the electro thermic manufacture of iron and steel. It is a criticism of the report of the commission appointed by the Canadian Government to investigate the different electro thermic processes for the smelting of iron ores, and the making of steel in Europe, which contains statements calculated to adversely affect the Sheffield crucible steel industry. Professor Arnold points out that, as regards steel, only one not very satisfactory and untested heat was made by the Keller process, yet upon such evidence the report states that this process is capable of producing steel equal to the best products of Sheffield's crucibles. "Such premature conclusions based upon such scanty data are not calculated to carry conviction to the experienced metallurgical mind." From a British point of view Kjellin's induction process deserves the most serious attention, in view, under certain conditions, of its probable competition with the crucible steel process. Analytically, mechanically and micrographically, this steel leaves nothing to be desired, but unfortunately chemical and tensile tests and the indications of the microscope have a limited value in determining the working capabilities of tool steel.

In his "conclusions" Mr. Harbord of the commission states that "steel, equal in all respects to the best Sheffield crucible steel, can be produced by the Héroult, Kjellin or Keller processes, at a cost considerably less than the cost of producing a high-class crucible steel." The above statement, so sweeping and involving issues of profound industrial importance, should have been made only as a result of a series of exhaustive working tests. For such, in the report, the reviewer has sought in vain. It is true that a series of test of turning tools made from Kjellin and Héroult steels has been carried out at Woolwich by H. F. Donaldson, but the results are quite inconclusive, because of the steels employed, hardly one was fit for turning tools. As to whether Kjellin electric steel is or is not equal to crucible steel time alone will show. The conclusion of the commission may be accurate, but it is certainly not based upon any scientific evidence worthy of the name.

Middlesbrough Iron and Steel Exports in December.

The customs return of the iron and steel shipments from the Tees during December shows a cargo of 3150 gross tons for the United States. This is the only cargo of the year for America, but a good deal of pig iron is to be sent across the Atlantic during the next few months, and some anticipate as good a year as 1902, when no less a quantity than 199,569 tons was forwarded. The best foreign customer during the year for pig iron was Germany, which took 116,077 tons.

Scotch Iron and Steel Notes.

Scotch ironmasters last week issued their annual returns of production of Scotch pig iron, including hematite and basic for the year 1904. The production, which is a record one, amounted to 1,339,740 gross tons, an increase of 51,667 tons over 1903. Stocks in Connal's stores and makers' yards amount to 155,414 tons, an increase of 27,356 tons, 24,457 tons of increase being in makers' yards.

In consequence of the recent advance of 1 shilling and 6 pence per ton in the price of hematite, Scotch steel makers have advanced their prices 2 shillings and 6 pence per ton all around. Ship plates are now £5 17s. 6d.; angles, £5 7s. 6d.; marine boiler plates, £6 7s. 6d., and bars £6 2s. 6d.

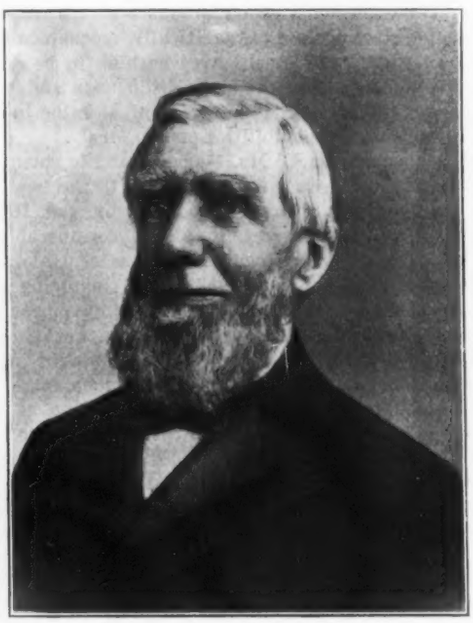
Difficulties have arisen in connection with the arrangements or combination which Stewart & Lloyd originated for the regulation of the tube industry. On good authority it is stated that in Scotland notice has been given to terminate existing agreements. This probably spells severe competition in Scotland, but the development is too recent to gauge accurately the more general effect.

Unrestricted competition cannot be confined to the Scottish side of the border, so that we may anticipate an invasion of the English market, which is at present none too healthy. S. G. H.

OBITUARY.

CHARLES LOCKHART.

Charles Lockhart, one of the founders of the Standard Oil Company, the first man to reveal to Europe the value of petroleum as an illuminant and the wealthiest man of the Pittsburgh district, with the possible exception of H. C. Frick, died at Pittsburgh on January 26, in his eighty-seventh year. Heart disease, induced by old age, was the cause of death. Mr. Lockhart was born at Cairn Head, near Whithorn, in Wigantownshire, Scotland, August 2, 1818. When seven years old he was sent to live with his uncle, John Marshall, a merchant of Garliestown, a seaport on Wigtown Bay, remaining with this uncle, attending school and assisting in the store, until he was 16 years old. Early in 1836 his parents decided to come to the United States with their family of seven



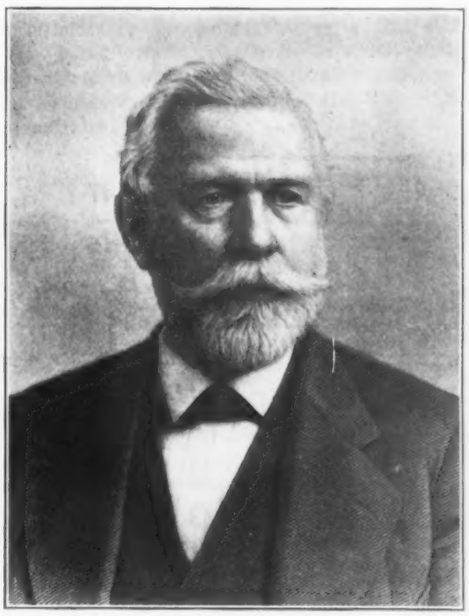
CHARLES LOCKHART.

children, going direct to Pittsburgh. Mr. Lockhart obtained employment with James McCully, with whom he remained for 19 years. The firm had a warehouse and a general store. He started as an errand boy at 15 cents a day, but saved his money and rose in the estimation of his employer until, in 1855, he was admitted to partnership in company with Major William Frew, a nephew of the proprietor, partner with Mr. Lockhart afterward in his many oil enterprises. This partnership continued until April 1, 1865. It was while a clerk in the employ of Mr. McCully that Mr. Lockhart became interested in petroleum and made his first venture in an industry in whose development he later became one of the great factors. Owners of salt wells, furnishing their product to the McCully firm, brought in with them what they termed Seneca oil, which oozed from the ground at the wells. Samuel M. Kier, a druggist, became interested and bottled the fluid as a cure for rheumatism, aches and pains. Mr. Lockhart saw in it a wider field and dreamed of lighting the world with the oil. He endeavored to enlist the interest of his employer in the product, but Mr. McCully would be led away by no such idle fancies. In 1852 Mr. Lockhart decided to make the venture on his own account, and from his savings purchased three barrels of the oil from Isaac Huff, who was part owner of a salt well in Westmoreland County, from which Mr. McCully obtained a large portion of his salt supply. Mr. Lockhart sold the oil at a profit and conceived that a large future awaited any one who would enter the business and energetically develop it. Against the advice of Mr. McCully he purchased a controlling interest in the well in April, 1853, and from that time until his death he was an oil producer. In 1859, when oil was discovered by Colonel Drake in large quantities on Oil Creek, Mr. Lockhart sent a representative to investigate the field. The report was favorable and he at once became active in that development. His oil was the first to reach Pittsburgh in commercial quantities. He then decided upon the building of a refinery at Brilliant Station, on the Allegheny Valley Railroad, where the oil could easily be floated from the oil country. This refinery was completed in 1861, and in 1862 Mr. Lockhart and Mr. Frew purchased the producing interest of the firm of Phillips, Frew & Co., and in partnership with William G. Warden established in 1865 a commission house in Philadelphia, the firm of Warden, Frew & Co., also building the Atlantic Refinery there to supply the demand from Europe for the oil. Mr. Lockhart was one of the first to enter into the plan of John D. Rockefeller to harmonize the conflicting and warring oil interests in a gigantic consolidation, and when the Standard Oil Trust was formed in 1874, Mr. Lockhart merged his refineries with those of the Standard. At the time of his death Mr. Lockhart was one of the large holders of Standard stock and was one of the potent but retiring figures in all of its great operations. He was interested in many important business ventures in a quiet way. He owned and was for many years president of the Vulcan Forge & Iron Works of the Lockhart Iron & Steel Company, McKees Rocks, manufacturer of bar iron, and he held the controlling interest in the American Axe & Tool Company, and was the means of forcing the minority interests to consent to a concentration of the widely scattered plants in a fine new works at Glassport a few years ago. Mr. Lockhart owned a large interest in the International Mercantile Marine Company through possession of a large block of stock in the International Navigation Company, former owner of the American and Red Star steamship lines, and he was also a heavy stockholder in the Cunard Steamship Company. He was one of the organizers and the dominant interest in the Pittsburgh National Bank of Commerce, of which he was president for many years, and was a director of the Union Trust, Mellon National and Union Savings Bank, National Insurance Company, Union Insurance Company and Western Union Telegraph Company. He was also a stockholder of the Pittsburgh Plate Glass Company and of the Jackson Lumber Company of Alabama, had mining properties in Colorado and other Western States and owned and operated two of the largest wheat farms in the Red River valley in Minnesota. Mr. Lockhart was active throughout his life in the affairs of the United Presbyterian Church, and as a monument to his family and as a gift from them he erected the magnificent church edifice of the Sixth United Presbyterian Church, on North Highland avenue. He was interested in many charities in a quiet way, but studiously avoided ostentation. He is survived by two sons and three daughters.

WILLIAM SELLERS.

In 1847 a young man of 23 started a business in Philadelphia which was destined to become one of the world's famous industrial establishments. The young man was William Sellers, founder of the great machine tool firm of William Sellers & Co., Incorporated, who for over half a century directed its policy. His death occurred on January 24 after a brief illness. His career was one of pre-eminent usefulness and his name will be forever enrolled on the list of men of mechanical genius who have made the United States the leading manufacturing nation of the world. William Sellers was born in Upper Darby Township, Delaware County, Pa., September 19, 1824, on an estate still held by the family under the original patent granted to Samuel Sellers in 1682. He received his education at a private school built and conducted by his relatives. Having a taste for mechanics, at the age of 14 years he entered the machine shop of his uncle, J. Morton Poole, on Brandywine Creek. He completed his apprenticeship at the age of 21, and then moved to Providence, R. I., where he became foreman for

Fairbanks, Bancroft & Co., manufacturers of engines and mill gearing. In 1847 he returned to Philadelphia and started in business on his own account. Shortly afterward he formed a partnership with Mr. Bancroft, one of his former employers, under the name of Bancroft & Sellers. Upon the death of Mr. Bancroft, which was in 1855, the firm name was changed to William Sellers & Co. Upon the incorporation of the firm in 1886 he was made president and engineer. In 1868 Mr. Sellers organized and became president of the Edgemoor Iron Company, manufacturer of bridges, Edgemoor, Pa., now a constituent part of the American Bridge Company. In 1873 he became president of the Wm. Butcher Steel Works, Nicetown, Pa., and reorganized it as the Midvale Steel Company, serving as president until 1887. He accepted the position of president of the Franklin Institute in 1864, when it was in a critical financial condition. By his energy and wisdom it was reconstructed and placed on a sound basis. During his presidency of the Institute he read a paper before the members on "Screw Threads and Nuts," in



WILLIAM SELLERS.

which he proposed the first formula ever offered for a system of making screw threads, which has since become the standard for the United States and the Continent of Europe. Mr. Sellers took a deep interest in public affairs. He was a Park Commissioner of Philadelphia from 1868 to 1872, member of the National Academy of Sciences since 1873, vice-president of the Centennial Board of Finance for the International Exposition of 1876, corresponding member of the Société d'Encouragement pour l'Industrie Nationale, France, since 1875, and was made a chevalier of the Legion d'Honneur in 1889 for his services in connection with the Paris Exposition. Much of the success of the Centennial Exposition at Philadelphia was due to his business ability and assiduous application to its interests. He was for several years a director of the Philadelphia & Reading Railroad and of the Philadelphia, Wilmington & Baltimore Railroad. In 1868 he was elected a trustee of the University of Pennsylvania. He is survived by a daughter and three sons.

NOTES.

HERBERT JEROME DAVIS, president of the American Copper Extraction Company and of the Davis Sulphur Ore Company of New Jersey, died in the Carlton Hotel, London, England, January 28, aged 61 years. He was born in Hancock, N. H., and had made his home in New York City.

SAMUEL A. CLOUGH, treasurer of the Rhode Island Malleable Iron Works, died at his home, Wakefield, Mass., January 27, aged 67 years. He was a native of Alfred, Maine, and began his manufacturing career as a boy of 16 years, working his way up to be treasurer of the Rhode Island Malleable Iron Works and also of the Fitchburg Duck Mills, Fitchburg, Mass. Mr. Clough served in the Forty-fourth Maine Regiment during the Civil War. He leaves six children.

CHARLES T. TREADWAY, a director of the Bristol Brass Company and the American Silver Company, president of the New Departure Mfg. Company and head of the Horton Mfg. Company, died at Bristol, Conn., January 27, aged 57 years. He was one of the most prominent citizens of Bristol, having held other important business offices in addition to managerial positions in the large industries of the town. He began his residence in Bristol 35 years ago, his first work in the town being to assist John H. Sessions in founding the Bristol National Bank. He leaves a daughter and three sons, one of whom, Charles P., is treasurer of the New Departure Mfg. Company.

EDWARD HEMPHILL MULLIN of the General Electric Company and an old time newspaper man, died suddenly from an attack of heart disease January 25 at his home in Milburn, N. J. He was born in Castleberg, County Tyrone, Ireland, October 22, 1859. He was graduated from Queen's College, Belfast, with honors in physics and chemistry in 1881. Shortly afterward he came to New York and engaged in newspaper work. From 1887 to 1895 he was an editorial writer on the staff of the New York *Evening Sun*. The two following years he spent on the staff of the New York *Times*, in charge of the technical reporting of that newspaper. Subsequently he became editor of the *Bookbuyer* and a prolific contributor to the magazine and technical press. On February 1, 1898, he entered the service of the General Electric Company, at first as manager of its advertising department, and latterly as a confidential representative of the company in many matters. He was the authorized representative of the company in all its relations with the press and the official host of the company whenever foreign engineers or capitalists desired to visit its works or become acquainted with its methods. He was prominent in Freemasonry and a member of the Engineers', Press, Lotus and Transportation clubs. He was vice-president of the New York Electrical Society and a director of the American Institute of Electrical Engineers, also vice-president of the Association of American Advertisers.

ALEXANDER MCGAW, a well-known architect and civil engineer of Philadelphia, Pa., died January 30, aged 77 years. Mr. McGaw built the pedestal for the Statue of Liberty in New York Harbor and also constructed the New York Central Railroad bridge over the Harlem River, the dry dock at Cramp's shipyard, Philadelphia, and the Girard avenue bridge in that city, together with many other large bridges and engineering structures in various parts of this country and Canada.

FREDERICK L. TITSWORTH, treasurer of the Chicago Brass Company, Kenosha, Wis., and secretary of the Benedict & Burnham Mfg. Company, Torrington, Conn., died January 24 at his home in Kenosha of heart failure, following pneumonia, aged 41 years. Mr. Titsworth had been connected with the Chicago Brass Company during the whole of his business life. He was born in Chicago, and remained in that city until he was appointed general superintendent of the company's plant at Kenosha some years ago.

JOHN EYRE, second vice-president of the firm of W. R. Grace & Co., New York, the well-known South American house, died January 25 at his home in Flushing, L. I., from pneumonia, aged 48 years. He was born in Ireland, and went to South America when a youth, where he obtained employment in the firm of W. R. Grace & Co., subsequently becoming manager of its branch in Lima, Peru, and then manager of the Valparaiso house. A few months ago he came to New York to become the second vice-president of the company.

CHARLES M. FOUCHE, Southern manager for the Crucible Steel Company of America, died suddenly January 17 in his office in Chattanooga, Tenn., from a stroke of apoplexy, aged 57 years.

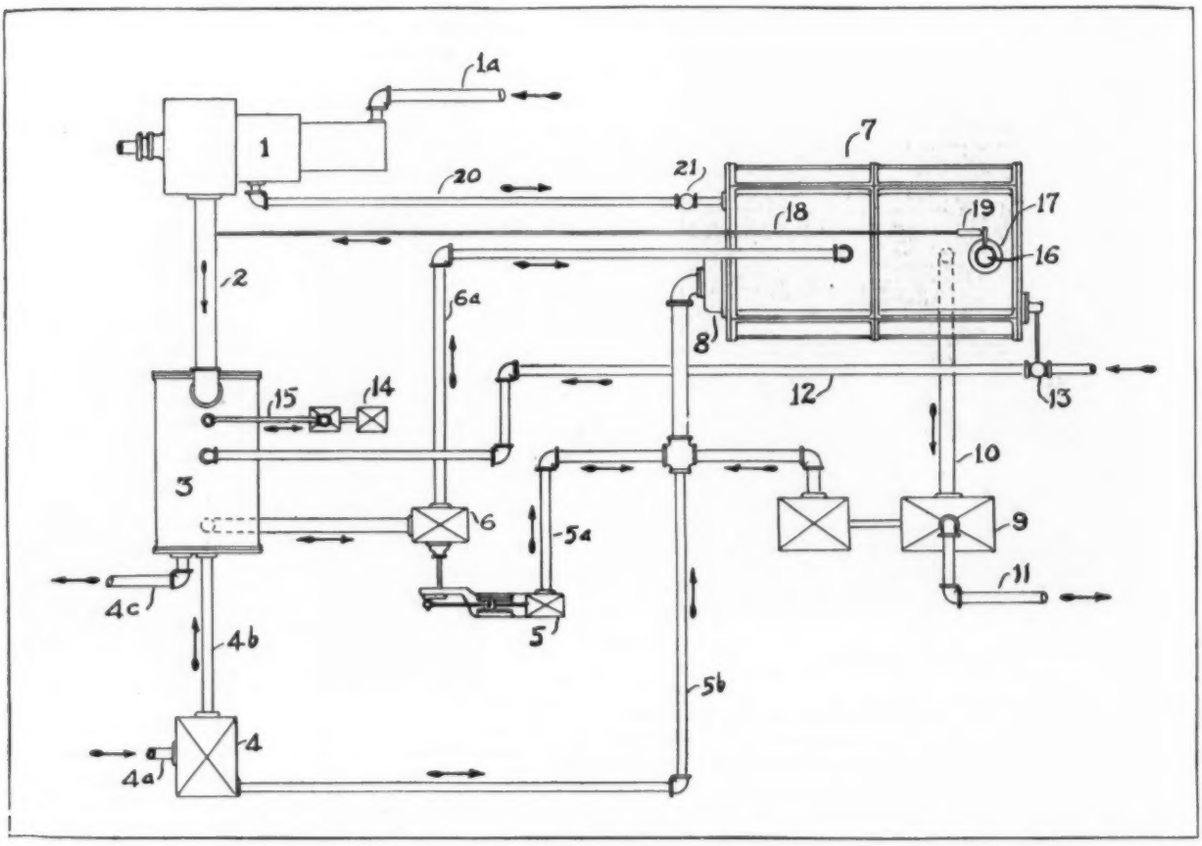
Open Feed Water Heaters in Connection with Steam Turbines.

Among the new problems which have arisen since the commercial development of the steam turbine an important one is the most efficient and satisfactory arrangement of the auxiliary equipment in plants operated by turbines. The Harrison Safety Boiler Works, Harrison, Pa., manufacturer of the Cochrane feed water heater, has paid special attention to the adaptation of this heater to such plants, and in these installations are many features which will be of interest to engineers.

The accompanying illustration shows an arrangement designed and patented by this company for heating and regulating the boiler feed water, which is particularly adapted to plants where steam turbines are operated in conjunction with surface condensers, although it is also applicable to plants where surface condensers are used with reciprocating engines.

Referring to the plan, 1 is the main steam turbine, which is supplied with steam from the boiler through the pipe 1 *a*. It exhausts through pipe 2 to the surface condenser 3. The surface condenser is supplied with water drawn by the pump 4 through suction pipe 4 *a*, passed to the condenser through 4 *b* and finally discharged through the pipe 4 *c*. An auxiliary engine is shown at 5, which drives a pump, 6, for drawing the condensed steam from the condenser and delivering it to the open heater 7 through the pipe 6 *a*. The exhaust pipe from the auxiliary engine 5 *a* joins the exhaust pipe 5 *b* from the pump 4. The feed water heater receives the exhaust from the auxilaries through an oil seperator, 8, and from the heater the feed water is taken by the pump 9 through the pipe 10 and discharged to the boilers through pipe 11. The exhaust from this pipe also joins the other auxiliary exhausts and passes through the oil separator 8. A supplementary cold water feed supply is afforded through the pipe 12 to the condenser 3 to furnish make-up feed when the condensed steam is not sufficient to feed the boilers. The supplementary water is controlled by the valve 13, according to the level of water in the heater 7, being automatically closed and opened by a float and connecting mechanism. An air pump, 14, exhausts the air from the condenser 3 through the pipe 15. When this pump is steam driven its exhaust also passes through the separator 8. The exhaust from the heater to the atmosphere 16 is provided with a back pressure valve, 17. The air liberated from the water in the feed water heater passes through an air valve, 19, and the air pipe 18 and is led to the condenser. In this way the air in the heater is withdrawn without any loss of steam.

If the exhaust from the auxilaries is more than can be condensed in the heater, the pressure increases until it opens the back pressure valve 17 and allows the surplus to escape to the atmosphere. Often the steam from the auxiliaries is insufficient to heat the feed water to the temperature of the steam itself. To cover such cases the pipe 20 is taken to the heater from a point in the turbine where the expansion of the steam is such as to insure the least loss of effectiveness with the greatest potentiality for the purpose of making up any possible deficiency in the auxiliary exhaust. In the pipe 20 is placed an automatic throttling valve, 21, so adjusted that the pressure of the steam when it enters the heater shall be below the pressure at which the back pressure valve 17 is set. Thus the supply of supplementary steam from the turbine depends upon the pressure in the heater and is regulated by the needs of the heater itself.



Plan of the Arrangement for Using a Feed Water Heater in Connection with a Turbine Run Condensing, Designed and Patented by the Harrison Safety Boiler Works.

The operation of this novel arrangement has important advantages. All of the condensation of the main exhaust is utilized in the heater, and the supplementary cold water is automatically regulated and supplied and is partially heated in the condenser by the utilization of the latent heat in the main exhaust. All of the exhaust from the auxiliaries is utilized up to the point where it provides more than is required in the heater, and should its supply be insufficient it is automatically supplemented by steam from the turbine. The boilers are furnished with water at a uniformly high temperature, there being no sudden fall in the temperature due to variations in the quantity of steam available for heating the water or in the quantity of the supplementary cold water required.

The methods by which these desirable results are obtained are simple, positive and entirely automatic.

It will be seen that in a plant in which this method of heating and regulating the boiler feed supply is used the auxiliaries are of the independent, steam driven noncondensing type. The manner in which the exhaust from these auxiliaries is utilized, however, makes them economical, for all of the heat in the steam which is not converted into work or accounted for by losses from radiation, &c. (and these quantities would be identical whether the auxiliaries were run condensing or noncondensing), is utilized in heating the feed water and turned back into the boilers. If the auxiliaries were run condensing the heat in the exhaust would be dissipated and wasted in the condensing water.

Cast Steel Locomotive Frames.

Until recent years it has not been found possible to make satisfactory locomotive frames of cast steel. The castings, being very long (25 to 38 feet), cooled with severe shrinkage strains, which, if they did not develop cracks, so impaired the strength of the frames that they were easily broken while in use. This was so common

Your committee considers cast steel a better material for locomotive frames than wrought iron.

The tensile strength of steel suitable for frames is about 75,000 pounds per square inch, as compared with 53,000 to 54,000 pounds per square inch for the best hammered iron.

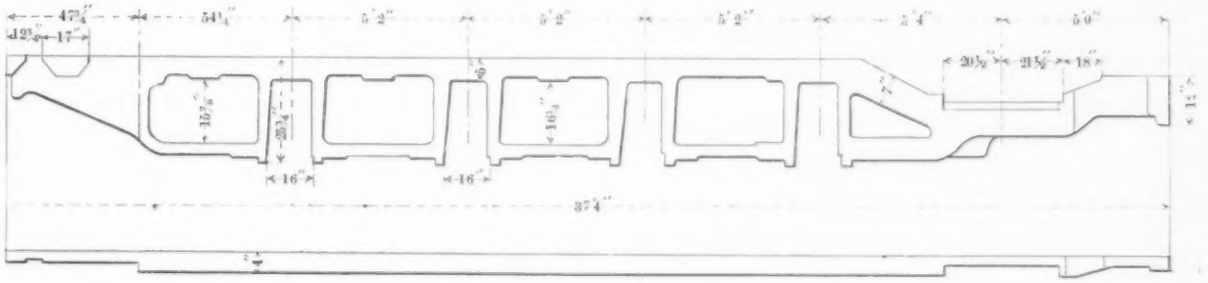
The cast steel frame is practically homogeneous—that is to say, there are no welds, and it is of a uniform texture throughout its entire length.

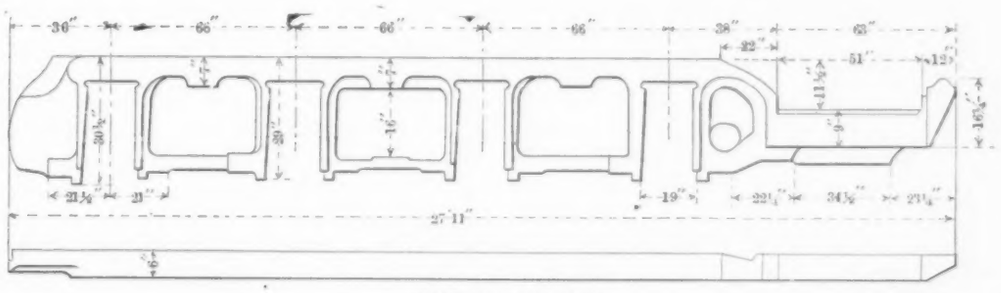
The number of projections required for the reception of brake work, tumbling shafts, rocker pins, &c., seriously complicates the production of modern frames in hammered iron, whereas the reverse is true in the manufacture of cast steel frames.

Generally speaking, steel is intrinsically superior to wrought iron, and all the difficulties experienced with cast steel are mainly chargeable to either design or method of manufacture and not to the steel *per se*.

To abandon steel for such reasons is a reflection on our engineering skill and manufacturing abilities. Therefore we should devote our time and skill to the improvement of the art and thereby approximate more nearly the possible theoretical advantages.

Of the 41 railroads reporting to the above committee, 15 railroads with 5613 locomotives favored iron frames, 18 railroads with 11,512 locomotives favored cast steel frames and 8 railroads with 4015 locomotives expressed no preference. Of the 15 roads above referred to which prefer iron frames, 11 of them do not use steel. From this report it will be readily seen that among the railroads where iron and steel are both used there is a decided preference for the cast steel frames. There seems to be no





Two Specimens of Cast Steel Locomotive Frames Made by the Union Steel Casting Company, Pittsburgh, Pa.

that a great many railroad men become prejudiced against the use of cast steel frames. More recently the steel casting manufacturers have overcome these difficulties. By improved methods of manufacture cracks are entirely avoided, and by thoroughly annealing the castings all shrinkage strains are removed. Cast steel locomotive main frames, as now made, are solid steel, without welds, and are as strong and safe at every point as steel of that section and design can possibly be.

The Union Steel Casting Company, Sixty-first street and Allegheny Valley Railway, Pittsburgh, Pa., which manufactures under a patented process, states that in the past two years it has furnished 774 cast steel locomotive main frames, of which only two were rejected, and these not for shrinkage cracks.

The American Railway Master Mechanics' Association in June, 1903, appointed a committee consisting of T. S. Lloyd, S. M. Vauclain, J. E. Sague, R. Wells, S. Higgins and A. Lovel, all practical railroad and locomotive men, to investigate the relative merits of forged iron and cast steel locomotive frames, and report to their convention in June, 1904. After a very thorough investigation they reported as follows:

doubt that cast steel locomotives frames, made by modern methods and thoroughly annealed, are superior to frames made in any other way.

The Union Steel Casting Company is sending to the mechanical heads of railroad companies blue prints illustrating various styles of locomotive frames which the company has manufactured during the past two years, two of which, selected at random, are illustrated herewith. The illustrations shown on these blue prints are extremely interesting, as they represent a distinct achievement in the line of steel castings. The frames are in some cases 37 feet 4 inches in length, with an extreme depth of 25¾ inches, while numerous others are from 30 to 35 feet in length, with an extreme depth of 32 inches. The railroad companies for which these frames were furnished comprise the New York Central & Hudson River, Pennsylvania, Lake Shore & Michigan Southern, Vandalia, Southern, Delaware & Hudson, Père Marquette, Missouri Pacific, St. Louis & San Francisco, Lake Erie, Alliance & Wheeling, Northern Pacific, Illinois Central, Buffalo, Rochester & Pittsburgh, Manufacturers' of St. Louis, Chicago, Lake Shore & Eastern, Chesapeake & Ohio and Chicago, Burlington & Quincy.

THE IRON AGE

1855—1905.

New York, Thursday, February 2, 1905.

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - - ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR.

Workmen's Compensation and Hard Times.

The industrial depression in Great Britain has brought forward the charge that the workmen's compensation act is the cause of a good deal of poverty among the working classes. It is claimed that the liability of employers for damages for injuries to workmen, no matter if the real responsibility lies with the workman because of his carelessness, has had the tendency to cause the dismissal of employees as soon as they arrive at an age that was formerly considered quite within the limits of usefulness as producers. A workman is quoted as saying that "as soon as the gray hairs begin to appear on a man's head he is discharged." Undoubtedly this is an exaggeration, but it must be true, nevertheless, that when business becomes slack and men have to be laid off, the older workman is the first to go, everything else being equal. Older men are probably less careless than their younger associates, but when they are injured it generally goes harder with them, and consequently the employer has to pay a greater sum for damages under the compensation act. The courts have failed to discriminate, it is said, between injuries themselves and complications arising from them in conjunction with physical ailments existing before the accident happened, and such complications are more apt to occur with older people.

Another reason for this claim against the compensation act as a cause of distress is that its beneficiaries are improvident and squander their principal. It is suggested that instead of payment of damages in a lump sum the injured workman shall receive an annuity based upon the award. The objection raised to this is that the annuity would be so small as to be nearly useless to the workman if he were incapacitated from labor, and doubtless such would be the case if the principal were capitalized and the workman given the interest at, say, 5 per cent. But supposing that he were paid in installments, at the discretion of the court, perhaps some of the evils of improvidence might be eliminated. If the award were £300 ($1500) and he were paid $150 a year, he would have an assured income for 10 years. If the employer were compelled to turn this award over to some Government trustee for the benefit of the workman, in addition to the yearly installment there could be given him the earnings of the unexpended balance, which would make it an investment for him. Such a trusteeship would also obviate the danger of the employer ceasing to be a financially responsible party. Each case would be considered by itself, as it must be, anyway, under the compensation act, and the court could regulate the annual income to conform with circumstances. Doubtless it is dangerous to give a poor man, unused to having money, any considerable sum in cash, for not only may he be by nature improvident, but he may become the victim of the numerous "get rich quick" schemes which are always lurking about to make victims of the unwary owner of money.

On the whole, these arguments against the compensation act do not seem of enough importance to affect the principle involved. The same claims might as truthfully and logically be made against the employers' liability acts of the United States. And the latter have the disadvantage of distributing compensation money unequally, for, as a general rule, the employer pays either too much or too little. If the jury considers the employee to be personally responsible for his own injuries, the man is not only without compensation, but he is also liable for costs and lawyers' fees, unless he has a contingent agreement with his counsel. On the other hand, the American jury is very apt to award damages out of all proportion to the injuries sustained. Consequently fewer workmen are given any relief, unless it be through the generosity of the employers, than is the case under the workmen's compensation acts. The American employer might with almost as much reason discharge elderly workmen because of their greater liability to accident, for, while the employers' liability acts do not hold the employer liable excepting where accident results from some cause against which he should have safeguarded his employees, yet the jury can never be depended upon to take a reasonable and just view of such questions of responsibility. Sympathy for the injured workman must naturally influence the "twelve good men and true."

Bringing the School to the Man.

It is estimated that more than 90 per cent. of the people in the United States have received or are receiving education reaching no higher than the primary or grammar schools. Out of every 1000 men, women and children now attending school 948 are in primary and grammar grades, 39 in high and preparatory schools and only 13 in colleges, normal and technical schools. The struggle for existence is so keen that the great majority of men are forced to enter their callings without any special preparation, and once in, school days are over. The expense in time and money of attending a technical school is so great that only a favored or unusually determined few are ever enrolled in such institutions. Meanwhile the marvelous development and increasing intricacy of industrial life call for men of trained minds as well as skilled hands, and the few men thus equipped in each establishment forge ahead to positions of responsibility, while the rank and file are machine tenders or simply "hands."

The small enrollment in technical schools shows how hard it is to bring the man to the school. But a new force is at work in which the school is brought to the man. Nearly 1,000,000 men and women have been or are now enrolled as students in the technical correspondence schools of the country, and to each one is given the sort of instruction he requires for his advancement in his daily labor without interruption to his work. Such men study during their evening hours with a definite purpose in view. They learn more about the theory and practice of their work that they may earn more. In doing this they become possessed of the secret of success—namely, that their futures lie, not with unions or a socialistic government, but with themselves. The habit of self development, the new impulse of looking within for strength and help in time of perplexity and need, and the consciousness of the ability to bring a trained mind to the aid of trained hands, are developing a new race of engineers and mechanics whose influence for good is almost incalculable.

Up to the present time these home study courses in practical work are carried on only by private institutions or in connection with two or three great colleges; but the

benefits are so great to both employer and employed that employers' associations in each trade or industry should give earnest consideration to some plan of offering to every employee home instruction supplemented by shop practice. Better still would be the results if the trade unions could be brought to see that the greatest good they could do to their members would be their education along practical lines—practical courses in instruction leading up to diplomas which would advance their holders to higher and higher grades on the union rosters and to better pay in the shop. A union card backed by such a system would be a *sesame* to the shop of most wide awake employers, and the competitive demand for men of the higher grades would insure higher wages for good men than the unions will ever be able to force on employers by present methods.

The British Tin Plate Industry.

British exports of tin plate are stated to have been higher last year than for nine years. Although the figures are not up to what they were in the halcyon period when this country was Britain's best customer, they show that great progress has been made in building up a trade to replace that lost by the establishment of an American tin plate industry. When the McKinley tariff was adopted by this country in 1890 the British tin plate manufacturers were seriously apprehensive that their business was about to receive a blow from which it might never recover. The United States had always taken much more than half of the British output. To lose such a trade could not be regarded as anything short of a calamity. Of course it was not lost at once. To build up the industry in this country was a task which required several years. When the Wilson tariff reduced the duty in 1894 a fair start had only been accomplished, and it looked as though a breach had been made through which imports of tin plate would flood the American market and drown the struggling domestic producers. But the severe depression prevailing at that time, destructive as it was to many of our business interests, was a blessing in disguise so far as American tin plate manufacturers were concerned. Steel billets fell so low that the benefits derived from cheap tin bars far overbalanced the reduced protection resulting from the lowered duty. Hence the tin plate industry thrived notably during that rather gloomy period, being almost the only branch of trade of which such a statement could then be made. In fact, the tin plate industry was so conspicuously profitable that so many embarked in it as to cause a reaction from overproduction by the time that general business was beginning to recover in 1898 and 1899. This condition of affairs was what led to the conception of a consolidation and the formation of the American Tin Plate Company.

Meanwhile the British tin plate manufacturers had also been benefited to some extent by the cheapness of steel. Competition for their trade was keen between American and German steel producers, and, thanks to the British fiscal system, no barriers were interposed in the form of custom duties. The British tin plate manufacturers have in this way long been able to purchase their raw material in the shape of the tin bar cheaper than they could make it. Further, they were driven to the substitution of improved methods for their antiquated processes, which resulted in the more economical conversion of the bar into the finished product.

It is now claimed that the British tin plate trade is in a sounder position than ever. The works are stated to be so well employed that the future appears assured. While it is possible that this may be the case, and that the time for forebodings has been safely passed, yet, on the other hand, it seems rather hazardous to base the hope of an industry on the foundation of cheap materials furnished by distant producers. The same fiscal system which enables such supplies to be imported cheaply also enables the finished product to be brought into direct competition with the maker in his home market. The steel works which sell tin bars cheaply may also be related to or affiliated with tin plate factories which may find it desirable to seek wider markets. Such markets will perforce be where British tin plates are sold. In the present stage of manufacturing development, whether it be viewed locally or in its bearing on the trade of the world, no industry can be considered in really sound condition unless it is in possession of good sources of supply of some one or more of its essential materials. To be securely situated it must have its own ore and its own coke.

The Manufacture of Iron at Tidewater.

With the increasing interest taken in foreign trade the movement toward locations on tidewater may be expected to show interesting developments in the near future. It is true that some quite important plants now thus situated have not shown the growth in this respect which had been anticipated, but in nearly every case they have been hampered by lack of capital. The time appears to have passed when from a moderate investment a manufacturing enterprise can steadily make accretions by means of its profits and eventually become a huge establishment able to hold its own in any field it enters. In these days capital is required on a vast scale to make an impression in trade. The ground occupied must be fortified at every point, and this requires money. With ample capital a location on the seaboard promises great opportunities to the steel manufacturer of the future. The requirements of the world are steadily increasing, and this country, as has been shown in recent years, can get its share of that trade if proper efforts are made to get it.

In Europe tidewater, or, as they are often termed, "littoral," iron and steel works have been increasing in number. In England certain districts, like the Cleveland, have always enjoyed the advantage of tidewater location, coupled in that case with special advantages in regard to proximity to local raw materials. In Wales the plants have moved from the interior location at the coal to the ports. In France such an enterprise as Creusot, located at the coal in the interior, has placed a new blast furnace at Cette, on tidewater. In Austria there are new furnaces at Trieste; in Italy pig iron making is established in Elba; in Germany large works have been built at Dantzic, while Hamburg has been proposed as an iron making center.

In many cases these plants rely upon sea borne ores and fuel from the back country; in others they assemble all raw materials by water.

A number of factors enter into this movement to the sea. Primarily, of course, a tidewater location looks to cheap distribution of products in coastal domestic and in foreign markets. The location is then dependent upon the flow of heavy tonnage of all kinds. Another point is that the quantity of ore is fixed, which creates a general tendency, other things being equal, to cause position closer to the ore to become more advantageous. But one variable factor has a more and more pronounced effect, and that is the steady reduction which is taking place in

the quantity of fuel needed for iron manufacture. This makes the works increasingly independent as to location from the coal fields, and the Gayley dry air process promises to further emphasize this tendency.

Finally, the by-product oven is playing a greater *rôle*. When located in a large industrial center the by-product oven, with certain coals, becomes an apparatus whose main function is to produce gas for industrial purposes, recent improvements in its enrichment giving it a higher lighting power at a slight additional cost.

As applied to our own Atlantic Coast, and to New York harbor in particular, these considerations have greatly changed underlying conditions, to which must be added the probability that before many years elapse the duty on foreign ores is likely to be repealed.

All these matters are now being given careful thought by important groups of capitalists, and the day is probably not far off when New York, and possibly some New England points, will become important centers of iron and steel manufacture.

Scrap Iron Problems.

Steel has supplanted iron for railroad rails, angle bars, car axles and other railroad supplies to such an extent that the percentage of old iron, as compared with steel, offered by railroads is sharply decreasing. The same thing is true of mill and country scrap. The result is that it is becoming increasingly difficult for bar mills, forge works and other users of iron scrap to secure adequate supplies of the preferred kind of raw material. Already the cost of iron scrap so nearly approaches that of pig iron that, after allowing for the greater melting cost and larger percentage of waste attending the use of scrap, numerous melters are concluding that for many purposes an all pig melt is nearly as cheap as the scrap mixture. In this way this problem carries its own solution.

Another problem is the growing scarcity of cast scrap. The advancement in the art of forging and the lessened cost of forged shapes are leading to the substitution of forgings for castings for large work, and a thousand and one small articles that formerly were made of cast iron are now formed from steel sheets and plates. The growing use of sheet steel instead of cast iron in the manufacture of stoves and ranges is another important case in point. This change of method and material is steadily reducing the available supply of cast scrap. Here, too, the constantly increasing cost of cast scrap is solving its own problem by leading foundrymen making the discovery that scrap is not nearly as indispensable to their mixtures as they once thought it was, and that it can, as a rule, be omitted where there is no actual economy in its purchase. The broadening intelligence of foundrymen, due to their intercourse in foundrymen's associations and to their study of excellent trade publications, has done much to supplant tradition with science. They learn what chemical constituents produce the best results, and order their pig iron accordingly, giving scrap a secondary place except when its price is so low as to render its use a distinct commercial advantage.

The Portsmouth Pressed Steel Company.—At Portsmouth, Ohio, William H. Pritchard has filed a petition in the courts asking for the appointment of a receiver for the Portsmouth Pressed Steel Company, Incorporated, manufacturer of pressed steel specialties. He avers that through mismanagement the company has incurred a large indebtedness and is now hopelessly insolvent. We are advised by R. C. Ricker, secretary and treasurer of the company, that the allegations made are utterly without foundation and the suit will be vigorously contested.

The Duty on Steel Floor Plates.

WASHINGTON, D. C., January 31, 1905.—The Treasury Department has decided to carry to the United States Circuit Court a question bearing upon the dutiable classification of an important class of steel plates, including those designed for use as floor plates and checkered on one side. Inasmuch as the court will be asked to construe several paragraphs of the metal schedule covering various kinds of steel plates, the case is one of considerable interest.

The plates which are the subject of this suit were imported at Philadelphia by R. D. Wood & Co. They measured 12 feet by 59 inches by 5-16 inch thick and were returned by the appraiser as dutiable at 4-10 cent per pound, under paragraph 135 of the Dingley act, but as the collector did not agree with this classification he assessed them for duty at 6-10 cent per pound under paragraph 126, covering "boiler or other plate iron or steel . . . valued at above 1 cent and not above 2 cents per pound." The importers claimed that the plates were dutiable either as returned by the appraiser under paragraph 135, covering "sheets and plates and steel in all forms and shapes not especially provided for in this act . . . valued above 1 cent and not above 1 4-10 cents per pound," at the rate of 4-10 cent per pound, or as "structural shapes of iron or steel, whether plain or punched or fitted for use," at the rate of 5-10 cent per pound, as provided by paragraph 125.

The plates in question were found to be smooth on one side and checkered on the other to prevent slipping, being intended to form the flooring of a boiler room. The Board of General Appraisers, in ruling on the protest of the importers, held that the provisions of paragraph 126 cover only boiler plate or other similar plate and "do not include plates of steel of every description, but merely plate steel." Boiler or other plate of the same general character was held to be "that class of plate which is used in the construction of boilers, tanks or vessels, such as can be cut, bent and shaped." The importation in question was declared to consist of steel plates and not plate steel, and by reason of its peculiar form and shape it was suitable only for the purpose for which it was made—namely, floor plates. The board therefore held that the provisions of paragraph 135 for "plates in all forms and shapes not especially provided for" properly covered the article, and that the alternative claim under paragraph 125 was not well founded, for in the imported state the plates were not structural forms or shapes. The protest of the importer was thus sustained and the decision of the collector reversed.

The Treasury Department, however, is unwilling to accept this decision and has had an investigation made concerning the process by which these plates have been manufactured and the general trade designation thereof. It has been found that the plates are produced in the same manner as boiler plates, and it has therefore been determined to test the question of the classification in the courts. Accordingly the collector of customs at New York has been instructed to bring a new case based on contentions set forth as follows:

> The Department is in receipt of a decision of the Board of General Appraisers of December 30, 1904, wherein it is held that certain steel floor plates made with one side checkered to prevent slipping are properly dutiable as plates not specially provided for at the rate of 4-10 cent per pound under paragraph 135 of the act of July 24, 1897, and not dutiable at the rate of 6-10 cent per pound as boiler or other plate iron or steel, under paragraph 126 of the same act. As the Department is informed that these checkered steel plates are made from steel produced by the Bessemer or open hearth process and are of the same general character as boiler or other plate iron or steel enumerated in paragraph 126, usually sold for the construction of boilers, tanks, ship plates, floor plates and other like uses, you are hereby directed to file an application for review of the said decision of the Board of General Appraisers in accordance with the provisions of section 15 of the customs administrative act of June 10, 1890.

An effort will be made by the Department to secure as comprehensive a decision as possible in this case with a view to clearing up the uncertainties that have marked the construction of these three paragraphs of the metal schedule since the Dingley act was first placed on the statute books.

W. L. C.

Bethlehem Improvements.

The Board of Directors of the Bethlehem Steel Corporation at a recent meeting at South Bethlehem, Pa., authorized the expenditure of $3,300,000 for improvements at that great plant. It is estimated that ultimately the completion of these improvements will involve a total outlay of over $5,000,000.

The new departments will include a new gun shop, for which $500,000 has now been appropriated, but which will, when completed, cost $1,000,000. There is also to be built a projectile shop, which will be a new line for the Bethlehem company. There will also be built new iron, steel and brass foundries.

A very large extension is to be made to the crucible steel department, with the necessary mills and hammers to manufacture an added line of products. This will include tires, railroad springs, &c., it being the plan of the Bethlehem Steel Corporation to convert its raw materials into finished goods. The estimate for this improvement is $1,000,000.

The plans also provide for new machine shops.

About $600,000 is to be spent for docks, a new railroad and general betterments at the mines of the Juragua Company in the Santiago district of Cuba, which the Bethlehem Steel Corporation controls.

There have been reports current that the company proposed to add to the blast furnace plant at Bethlehem. This is not correct, but it seems likely that when the new plant is completed the Bethlehem company will not be so large a factor in the open Eastern Pennsylvania pig iron markets in foundry, low phosphorus and basic metal as it has been in recent years.

Iron and Steel Exports and Imports in 1904.

The monthly report of the Bureau of Statistics of the Department of Commerce and Labor, just issued for December, shows that our export trade in iron and steel is feeling the effect of the accelerated home consumption. Taking the commodities for which quantities are given, the December exports only totaled 74,761 gross tons, as compared with 121,709 tons in November, 129,557 tons in October, 131,886 tons in September and 101,124 tons in August. The details for the month and for the entire year are given in the following table:

Exports of Iron and Steel.

	December.		—Twelve months.—	
	1904.	1903.	1904.	1903.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	3,141	5,070	49,025	20,379
Scrap	1,361	2,745	26,785	8,034
Bar iron	2,295	360	29,582	19,380
Wire rods	2,028	1,105	20,073	22,360
Steel bars	2,555	2,722	25,894	17,802
Billets, ingots, blooms	18,162	4,065	314,324	5,445
Hoop, band, scroll	436	199	3,435	2,141
Iron rails	3	38	1,405	181
Steel rails	18,996	7,522	414,845	30,656
Iron sheets and plates	477	141	4,728	4,782
Steel sheets and plates	3,482	1,569	50,477	13,312
Tin plates and terne plates	539	88	7,898	292
Structural iron and steel	5,741	3,015	55,514	30,641
Wire	10,169	9,959	118,585	108,521
Cut nails	658	695	9,274	8,890
Wire nails	4,368	2,733	32,788	31,453
All other, including tacks	350	259	3,046	2,321
Totals	74,761	42,285	1,167,678	326,590

Referring to the figures for the year, it will be observed that the largest item in our exports was steel rails, which reached a total of 414,845 tons. The next largest was the item of billets, blooms, etc., which reached 314,324 tons. The third item is wire, amounting to 118,585 tons. The exports of structural iron and steel footed up 55,514 tons. It is interesting to note that tin plates and terne plates were exported to the extent of 7898 tons.

Analyzing the figures of steel rail exports, it seems highly probable that 1904 will hold the record for some time. British North America took 216,801 tons, or more than half of our rail exports, but that market is now being supplied by home mills. The destination of other rail shipments is given as follows:

	Gross tons.
Europe	17,581
Central America	7,840
Mexico	23,871
West Indies	15,557
South America	28,347
Japan	28,992
Other Asia and Oceanica	72,746
British Africa	1,355
All other Africa	1,755

Taking the values of all kinds of iron and steel exported, including machinery and other manufactures, but excluding iron ore, the total value for the year was $128,553,613, as compared with $99,135,865 in 1903. The total exports of iron ore in 1904 were 213,865 gross tons, against 80,611 tons in 1903.

The imports of commodities for which quantities are given show a slight gain in December as compared with November. The quantity imported in December was 17,696 gross tons, against 13,893 tons in November. The imports of the same commodities for October were 20,575 tons, for September 21,006 tons and for August 20,878 tons. The detailed figures for the month and for the entire year are given in the following table:

Imports of Iron and Steel.

	December.		—Twelve months.—	
	1904.	1903.	1904.	1903.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	5,815	14,719	79,500	599,574
Scrap	1,032	2,525	13,461	82,921
Bar iron	2,112	4,001	20,911	43,392
Rails	332	2,067	37,776	95,555
Hoop, band and scroll	190	6	2,117	1,525
Billets, slabs, bars, &c., steel in forms n.e.s.	530	1,481	10,801	261,570
Sheets and plates	158	479	4,165	11,557
Tin plates and terne plates	5,706	2,500	70,652	47,360
Wire rods	1,251	1,824	15,313	20,836
Wire and articles made from	310	479	3,956	5,018
Structural iron and steel*	220	923	7,203	8,865
Chains	11	4	358	373
Anvils	29	35	167	250
Totals	17,696	31,043	266,380	1,178,796

* Included in "all other" prior to July 1, 1903.

It will be observed by the above table that the largest imports in December were first of pig iron, second of tin plates and terne plates and third of bar iron. The total imports for the year were less than one-fourth of the imports in 1903.

Turning to the total quantities of all kinds of iron and steel imported, including manufactured articles but excluding iron ore, the value of the importations in 1904 was $21,621,970, and $41,255,864 in 1903, or a trifle more than half. The total quantity of iron ore imported in 1904 was 487,613 gross tons, against 980,440 tons in 1903.

An Iron Ore Association Organized.—CLEVELAND, OHIO, January 31, 1905.—(*By Telegraph.*)—The ore shippers of the Lake Superior region have organized the Lake Superior Iron Ore Association to succeed the old one, which was broken up last year. It will be largely a statistical body and disclaims any intention of trying to regulate the prices and the output, since the members of the association are too far apart on many of those questions. The officers elected were: W. G. Mather, Cleveland Cliffs Iron Company, president; E. W. Oglebay, Oglebay, Norton & Co., vice-president and treasurer, and William B. Treat, secretary. The association has collected data showing that on January 1 the amount of ore on Lake Erie docks was about 5,000,000 tons, against 6,000,000 tons on the same date a year ago.

Frederic A. Parkhurst has taken H. D. Beach's place as manager of the Pacific Iron Works, Bridgeport, Conn.

PERSONAL.

H. V. De Hart, for a number of years connected with the New York office of the Pennsylvania Steel Company, has severed that relationship to form a new connection with the Carpenter Steel Company, 1 Broadway, New York.

Henry W. Bennett, president of the Indianapolis Stove Company, Indianapolis, Ind., has been recommended by Senator Beveridge for the position of postmaster of that city.

The directors of the Vulcan Detinning Company have elected S. R. Beardsley president, to succeed the late S. A. Ginna, Lyman G. Bloomingdale, of Bloomingdale Bros., New York, was elected vice-president. Isaac Stiebel and B. Nicoll were elected directors of the company. Mr. Stiebel is vice-president of the Mechanics' & Traders' Bank. Mr. Nicoll is head of the firm of B. Nicoll & Co., 59 Wall street, New York, iron and steel merchants.

Samuel Spencer, president of the Southern Railway Company, and the personal representative of J. P. Morgan in a large number of corporations, will shortly be elected a director of the Tennessee Coal, Iron & Railroad Company. He also will become a member of the Executive Committee, and will take a prominent part in the management of the company.

After a connection with the iron business extending over 40 years, T. S. Casey of Chicago, Western sales agent of the Wheeling Steel & Iron Company, is about to retire to private life and will take up his residence at Unionville, Orange County, Va. Mr. Casey has been a very prominent figure in Western trade circles during his long career. In the old days when the cut nail was an important commodity Mr. Casey was an influential factor in this trade, and when the tin plate industry was established he became prominently identified with that branch. For many years he has also been conspicuous in the wrought pipe trade, and was one of the first to win consumers of pipe to the use of soft steel instead of wrought iron. He will carry with him the best wishes of a very wide circle of friends in the hardware and iron trades of the West.

W. P. Snyder, Pittsburgh, president of the Shenango Furnace Company, Sharpsville, Pa., has gone to Florida for the winter.

O. R. C. McCollum, Youngstown, Ohio, has been elected treasurer of the Fairbanks Steam Shovel Company, Marion, Ohio.

T. C. Prouty, until recently connected with the Prouty Mfg. Company, Albion, Mich., is now associated with the Wilcox Mfg. Company, Aurora, Ill.

Charles W. Jackson, Chicago, has just accepted the position of general manager of the Pacific-Alaska Transportation & Coal Company, whose offices are at San Francisco and mines in the southwestern peninsula of Alaska, near the Aleutian Islands. Mr. Jackson was up to 1902 Western manager of the Davis Coal & Coke Company, when he became manager of the coke department of Rogers, Brown & Co. at Chicago, from which connection he recently resigned.

Thomas Mathias, superintendent of the roll turning department of the Illinois Steel Company at South Chicago, has resigned to enter the employ of the Lackawanna Steel Company, Buffalo. He will be assistant to Superintendent B. F. Sheldon. Mr. Mathias had been in the employ of the Illinois Steel Company since 1887, when he began as an apprentice. His associates at South Chicago presented him with a stop watch as a token of their esteem.

Some important changes have just been made among officials of the Carnegie Steel Company. William Whigham, formerly superintendent of the Howard Axle Works, has been appointed assistant to President A. C. Dinkey. James H. Grose, formerly superintendent of the beam mills at Homestead Steel Works, succeeds Mr. Whigham as superintendent of the Howard Axle Works. Louis P. Lincoln succeeds Mr. Grose, and A. P. Tilley succeeds Mr. Lincoln as foreman of the 25-inch mill at Homestead. John A. Nichols, assistant superintendent of open hearth plants Nos. 1 and 2 at Homestead, has been appointed superintendent of the open hearth department of the Clairton Works. Mr. Nichols is succeeded by William J. Wilkinson. Lawrence L. Hartzell has been appointed assistant superintendent of the converting department of the 28 and 32 inch mills of the Homestead Steel Works. This position was formerly held by J. A. Patterson. Samuel Worton, formerly assistant superintendent of No. 3 open hearth plant at Homestead, has been appointed superintendent of the open hearth department at Donora.

C. D. Dyer, general freight agent of the Crucible Steel Company of America at Pittsburgh, has resigned and has been appointed assistant to W. P. Snyder, president of the Shenango Furnace Company, Frick Building, Pittsburgh. Mr. Dyer will also look after freight matters for W. P. Snyder & Co. and the Shenango Furnace Company.

T. J. Joyce has withdrawn from the firm of Domhoff & Joyce, iron commission merchants, Cincinnati, and will retire from business. About a year since Mr. Joyce went abroad for the benefit of his health and since his return some months ago has taken no active part in the firm.

The Philadelphia Automobile Show.—The fourth annual automobile show of Philadelphia was held in the First Regiment Armory in that city during the week January 23 to 28. It was given under the auspices of the Automobile Trades Association of Philadelphia and was under the personal management of H. D. Le Cato. The exhibits included 20 machines equipped with four-cylinder vertical engines, some 12 two-cylinder, 20 double opposed and a few one-cylinder horizontal engines. Gasoline cars easily led the way in point of number exhibited, while there were five steam and three electric machines shown. The horse-power of the machines displayed would average about 14½, the tendency being toward good, serviceable road machines rather than high speed, fancy types. Many of the cars for 1905 have been improved, both in the design of engines and general model of the car. A large number of the machines exhibited were taken over from the late New York show. Weather conditions were generally unfavorable during the week and the attendance was therefore hardly as large as was expected, but the heavy snow with which the streets were filled afforded excellent opportunities for demonstrating the practical working of the various machines under adverse conditions. Sales during the show were quite large and generally satisfactory to the exhibitors.

The Reese-Hammond Fire Brick Company.—A meeting of the company's creditors was held in Pittsburgh January 30. Statements made to the meeting showed that since November, 1903, when the Reese-Hammond interests went into the receiver's hands, the plants have only been partially operated, but that the net profit was in the neighborhood of $80,000, that the business outlook was bright, and if the proper care was taken in the management and operation of the various plants it was only a question of a few years until the debt could be reduced to such an extent as would allow the company to again take charge of the plants and operate them, without being too heavily burdened. The creditors present, who hold about 90 per cent. of the claims, unanimously voted to sign an application for the dissolution of the receivership and the conduct of the business under the supervision of a creditors' committee for five years. If the remainder of the creditors sign it is planned to put all the plants in operation and keep them running steadily as long as business conditions will justify.

The Page Woven Wire Fence Company, Monessen, Pa., recently bought the business of a Chicago company making spiral springs and will remove the plant to Monessen, where it will make all kinds of spring wire and a line of spiral springs. Plans are being prepared for the erection of two new buildings, one to be 75 x 180 feet and the other 75 feet square.

NEWS OF THE WORKS.

Iron and Steel.

The Sharon Furnace of the Carnegie Steel Company, at Sharon, Pa., is expected to go in blast about February 15. This stack is 11 x 75 feet and has a daily capacity of about 250 tons. The company's three blast furnaces at the South Sharon works turned out in one day recently 1378 tons of pig iron, the best previous record for one day having been 1236 tons.

At the annual meeting of the stockholders of the Sligo Iron & Steel Company, held at Connellsville, Pa., last week, the following officials were elected: Charles Davidson, president; J. M. Reid, vice-president; Joseph McConnell, secretary, and E. T. Norton, treasurer. The company's plant, which is located at Connellsville, was first put in operation September 30, 1903, to continue the business of the Sligo Rolling Mills, formerly of Pittsburgh, but which were dismantled. The products consist of iron and steel sheets from No. 9 to No. 20 gauge, iron and steel plates No. 8 gauge and heavier, and refined iron bars, the annual capacity being 50,000 tons.

On account of the very active demand for billets and bars, the Bessemer department at the Homestead Steel Works of the Carnegie Steel Company will be operated on Sundays hereafter.

The Oliver Iron & Steel Company, Pittsburgh, has recently bought the Ihmsen glass property, comprising nearly 3 acres, to give more room for existing works. No plans have as yet been considered for utilizing the property

The Niles Corrugating Company, organized at Niles, Ohio, for the manufacture of corrugated iron and steel roofing, has started the erection of a building 150 feet in length. The necessary equipment has been bought and the company expects to be in the market with a full line of corrugated iron and steel roofing about March 1.

After more than a year and a half of idleness the Midland Steel Works, owned by the American Sheet Steel & Tinplate Company, at Muncie, Ind., has resumed operations in one-third of its departments. The entire plant will be run as rapidly as the new coal furnaces are completed. The plant will then employ 500 workmen.

The plant of the Independent Rolling Mill Company, Cuyahoga Falls, Ohio, is advertised for sale by W. E. Young, an attorney of Akron, Ohio. The plant consists of a 10-inch finishing mill, two Lauth heating furnaces with full equipment, one 18-inch muck mill, five scrap furnaces, with engines, boilers, machine shop, electric light plant, &c.

The Norwalk Steel & Iron Company, Norwalk, Ohio, is installing a 12-inch bar mill, together with a 300 horse-power engine to operate it. The new machinery will increase the output of the mill very materially.

The Belfont Iron Works Company is rebuilding its blast furnace at Ironton, Ohio, and expects to have it ready for blast by March 1.

The Wheeling Steel & Iron Company, Wheeling, W. Va., is rebuilding its blast furnace at Martins Ferry, Ohio, and expects to have it ready for operation in April next. The stack was idle during all of last year. The two blast furnaces of this concern at Wheeling are in operation.

The Carnegie Steel Company, Pittsburgh, owns and operates 51 blast furnaces, of which 45 were in blast on January 1 and only six idle. At present the Carnegie Steel Company has only four blast furnaces idle, these being one Isabella and one Lucy at Pittsburgh, one Donora and the Zanesville stack at Zanesville, Ohio. Of the two blast furnaces at Donora, one has been in blast about a month and the other is expected to go in blast Saturday.

The annual meeting of the stockholders of the Standard Tin Plate Company of Washington, Pa., was held last week, at which the following officers were elected: Joseph Underwood, president; J. V. H. Cook, treasurer; Louis Follett, secretary, and W. H. Richards, general manager.

One of the furnaces of the Colonial Iron Company, at Riddlesburg, Bedford County, Pa., has been started after an idleness of almost a year, during which repairs were made. The company is also running its coal mines and coke ovens.

The Berkshire Iron Works is planning to start one of the furnaces at Sheridan, Pa., as soon as it can be made ready. J. Mitchell Clark is president and S. H. Chauvenet, manager. The New York office is at 45 Wall street.

The Hollidaysburg Iron & Nail Company, Hollidaysburg, Pa., advises us that it expects to have its plant in operation within the next 30 days, particularly the cut nail department, which it hopes to have in full operation by that time, and will manufacture a superior quality of iron cut nails.

General Machinery.

Wickes Brothers, Pittsburgh, manufacturers and dealers in boilers, engines, pumps, heaters, machinery and supplies, advise us that business prospects with them for this year are very encouraging and among sales they made in January are the following: To the Harrisburg Pipe & Pipe Bending Company, Harrisburg, Pa., one 32-inch blooming mill, one pair of 28 x 48 inch engines, one blooming shear, two four-pit soaking furnaces, together with the necessary tables, hydraulic apparatus, &c.; Myersdale Sheet Steel Company, Myersdale, Pa., one 28 x 60 inch Corliss engine; Newark Iron & Steel Company, Newark, Ohio, one 20 x 27 inch Russell four-valve automatic engine. The most notable sale made in January by this concern, as regards distance of the shipment, was an 18 x 36 inch Corliss engine with 22-inch bar mill to John Pender & Co., Sydney, Australia. Wickes Brothers have made a number of foreign shipments of machinery and their trade with the other side is constantly increasing.

The Motch & Merryweather Machinery Company, Cleveland, Ohio, reports that business in that district has shown a marked improvement since the first of the year and that a number of good deals are now materializing. The company recently sold to the Jeffery Mfg. Company, Columbus, an outfit of eight heavy tools, including punches, shears, bending rolls, &c., all of which will be built by the Cleveland Punch & Shear Company, Cleveland.

The F. W Spacke Machine Company, Indianapolis, Ind., has increased its capital stock from $20,000 to $60,000. F. W. Spacke, president.

The W. A. Jones Foundry & Machine Company, Chicago, is adding a machine shop and foundry, to be 75 x 180 feet, of brick and steel construction. The equipment will be electrically driven. A 125-horse-power Westinghouse generator has been purchased.

The Black Brothers Machinery Company, Mendota, Ill., has shipped one of its No. 1 Pioneer molding sanders to China.

The Putnam Foundry & Machine Company, Putnam, R. I., has declared a 6 per cent. dividend and has elected the following officers: Edwin Mullan, president; A. C. Stetson, vice-president; Wm. R. Barber, secretary and Treaturer, and W. J. Turner, assistant manager.

The Stoever Foundry & Mfg. Company, Myerstown, Pa., states that it has recently made a number of shipments for export of its patent shaking grates for boilers, some of them being for Cuba and Mexico. The company has also just completed two more of its pipe threading machines for the Columbia pipe mill of the Susquehanna Iron & Steel Company. The two completed were of the new automatic type.

Power Plant Equipment.

J. W. Hale, Hartford, Ky., is building an electric lighting plant for the Kentucky Light & Power Company. It is expected to have the plant running in 60 days.

The Kokomo Boiler Compound Company, Kokomo, Ind., has been incorporated with $25,000 capital stock by Wm. H. Brandon, Wm. H. McReynolds and H. B. Reiber.

The Commercial Club of Muncie, Ind., has raised a fund of $13,000 as a bonus to insure the removal to that city of the boiler works of Broderick & Quinlan, Montpelier, Ind.

The Scottdale Foundry & Machine Company, Scottdale, Pa., builder of gas engines, advises us that it is running its shops to full capacity, and has on several occasions been compelled to run at nights to meet the demand for its gas engines and other products.

Frank Morris, Warren, Ohio, is at the head of a company formed at Middlefield, Ohio, for the manufacture of hot air engines for pumping and electric light plants. The company will erect a plant at Middlefield.

The Guardian Trust Company, Cleveland, Ohio, which is erecting a large office building, has placed a contract with Chafer & Becker, Cleveland, for the power plant and heating equipment.

The Wm. Tod Company, Youngstown, Ohio, has been awarded a contract for a 20,000,000-gallon high pressure vertical pumping engine for the Turkey Creek pumping station at Kansas City, Mo. The pump cost $114,000, and the company agrees to have it in operation in 16 months.

The following is a list of Hornsby-Akroyd oil engines recently installed or being constructed by the De La Vergne Machine Company, New York: United States Navy Department, wireless telegraph station, two 50 horse-power; Indianapolis Pipe Line Company, Geneva, Ind., one 32 horse-power; Ohio Oil Company, Findlay, Ohio, one 25 horse-power; C. M. Holbrook, Oil City, Pa., two 32 horse-power; the Charles Mills Supply Company, New York, one 13 horse-power, one 7 horse-power; E. C. Bumiller, Iquique, Chile, two 4 horse-power; Thirteenth Regiment Armory, Brooklyn, N. Y., one 20 horse-power; Honolulu Iron Works, one 32 horse-power; Balbach Smelting & Refining Company, Newark, N. J., one 50 horse-power; C. E. Hewitt & Co., New York, one 125 horse-power; Boston Lighthouse Department, two 4 horse-power; Bristol Electric Light Company, Bristol, N. H., one 50 horse-power; Armour Car Lines, Chicago, Ill., two 125 horse-power; Thos. Stephens & Sons, Limited, Albany, N. Y., one 16 horse-power; Remington Machine Company, Wilmington, Del., one 1½ horse-power; Lighthouse Department, Tompkinsville, S. I., two 13 horse-power; Lighthouse Department, Milwaukee, Wis., four 16 horse-power; Andrews-Doron Company, Los Angeles, Cal., one 50 horse-power and two 125 horse-power.

George H. Houck, Tonawanda, N. Y., will erect a factory for the manufacture of gas and gasoline engines. The building will be of modern construction and equipment, and the newly

established business will give employment to a considerable force of workmen.

The recently incorporated Kirkham Motor Mfg. Company, Bath, N. Y., will be in readiness for active operations by April 1. Charles B. Kirkham has been elected president; Matthew Shannon, vice-president; David L. Stewart, secretary, and Charles A. Elias, treasurer.

Foundries.

Though it has not yet been definitely decided, it is probable that a new company will be organized to operate the Union Foundry at Catasauqua, Pa., which was recently purchased by Leonard Peckitt, president of the Empire Steel & Iron Company.

The Canada Iron & Foundry Company, Limited, St. Thomas, Ont., has just moved into its new shops, which comprise a main foundry building 76 x 600 feet, a warehouse 40 x 130 feet, a shipping room 32 x 70 feet, besides a machine shop, power house and office building. The main building is divided into a car wheel molding shop, a general casting shop, a furnace room, cupola room and a machine shop. The firm manufactures chiefly railroad wheels and railroad castings. Its main offices are at Montreal and it has works at Hamilton as well as the new plant just completed at St. Thomas. J. A. Kilpatrick is manager of the St. Thomas plant.

The Bowler Foundry Company, Cleveland, Ohio, is preparing to rebuild and extend its present plant. It will erect a building 40 x 200 feet, one story high, equipped with crane, and will alter some of the present buildings. The people at the head of this company are interested in the Bruce-Merriam-Abbott Company, which manufactures gas engines, electric lighting plants, &c., and this company will occupy a plant adjoining that of the Bowler Company.

The Southern Metal & Mfg. Company will soon break ground for a 120-ton lead and copper smelting and refining plant at Litchfield, Ill. The plant will include, besides the smelters and alloy plant for the manufacture of solder, Babbitt metal and other alloys, a brass foundry equipped with modern appliances, including oil furnaces and an iron foundry for the manufacture of steel pipe, fittings and other castings. The principal offices of the Southern Metal & Mfg. Company are at St. Louis, Mo.

The Riverside Foundry, Newark, N. J., announces that it is equipped with every facility for the manufacture of castings in crucible steel, iron, brass, bronze, copper and aluminum. Robert H. Ireland, formerly superintendent of the Jackson Architectural Iron Works, New York, and Thomas Malcolm, for many years with the Benj. Atha Steel Casting Company, Newark, and recently with the Uniform Steel Company, are in charge of the foundry. J. Smylie Kinne has charge of the office and financial details. P. J. Ryan is the sales agent.

A large chilled car wheel plant is to be erected at Decatur, Ala., by parties whose names are withheld for the present. Address the Business Men's League.

Bridges and Buildings.

The Widell-Finley Company, Chicago, Ill., and Mankato, Minn., has been incorporated to carry on a general engineering and contracting business and succeeds to the contracting business of G. Widell of Mankato, Minn. It will make a specialty of all classes of foundation and substructure work, masonry and concrete structures and the erection of steel and wooden bridges. The officers of the company are: Gustaf Widell, president; Wm. H. Finley, vice-president and manager; Isaac N. Griffith, secretary and treasurer, and Wm. A. Hazard, general superintendent. The Chicago offices of the company are at 655-656 Monadnock Block.

A bridge to cost $50,000 will be erected over the Wabash River at Cayuga, Vermillion County, Ind. The Board of County Commissioners meets at Newport, the county seat.

Bids are to be received until February 7 for the construction of a bridge to cost $165,000 across the White River at River avenue, Indianapolis, Ind. H. Klausmann is county surveyor.

Wm S. Hewett & Co., Minneapolis, Minn., have the contract for the erection of a highway bridge 620 feet long over the Yellowstone River near Junction, Mont. The contract price for the work is $34,700. The same company has been given a contract for building a bridge over the Yellowstone River at Forsyth, Mont. This bridge is to be 850 feet long and the contract price is $53,820.

The firm of A. D. Burnett & Co., bridge builders, Galesville, Wis., has dissolved. Messrs. Littell and Ward retired and A. D. Burnett will continue the business. The branch office of the firm at Chippewa Falls, Wis., will be discontinued.

Mr. Sullivan, who was formerly foreman and superintendent for Ernest Bagge, New York, manufacturer of ornamental and structural iron and steel, has been taken into the firm, which has been reorganized as the Bagge & Sullivan Iron Works. The plant, which has been at 155 East 128th Street for a number of years, is to be extended in the near future.

The New York & Harlem Railroad Company is contemplating the erection of a four-track elevated system through Mount Vernon, N. Y., when it begins the operation of its trains by electricity between the Grand Central Depot and White Plains. The elevated structure will be more than a mile long.

Fires.

The Mt. Carmel Axe Company's plant, Mt. Carmel, Conn., was destroyed by fire January 27, with a loss of $30,000.

The shops of the Denver & Rio Grande Railroad at Gunnison, Col., were destroyed by fire recently. About $50,000 damage was done.

The large malt house of the Kip's Bay Brewing Company, New York, was destroyed by fire last week. The loss is placed at $100,000.

The body and gear works owned by David S. Wagner & Co., Carlisle, Pa., were destroyed by fire January 28. The loss is estimated at $50,000.

The factory of the C. N. Maesti Furniture Manufacture Company, New Orleans, La., was burned January 27, the loss being about $85,000.

Fire destroyed the buildings containing the casting furnaces and ovens of the St. Louis Plate Glass Company, St. Louis, Mo., entailing a loss of about $125,000 covered by insurance. The burned portion of the plant will be rebuilt and operations will be resumed in about four months.

The Wooley Wheel Company's works at Sandusky, Ohio, were burned last week. The loss is about $125,000.

The plant of the Delaware Metal Company, Philadelphia, Pa., was destroyed by fire January 31. The loss is about $70,000.

Hardware.

The McCloskey Wire Fence Company, Toledo, Ohio, is planning to move its present plant at Detroit to Toledo. A large plant will be erected on the Terminal Belt Railway. The company is also preparing to go into the manufacture of a patent cement post which is to be used in connection with its fence in place of timber posts. The company owns patents on machinery for the production of cement posts having wire centers.

The Koepke Nut & Bolt Company, Elyria, Ohio, which recently erected a plant for the production of nuts and bolts by means of the Koepke machine, has been meeting with such success that it is planning to erect an addition to the factory and operate more of its machines.

The Shanklin Hardware Company has been incorporated at Frankfort, Ind., with $30,000 capital stock, by John C., Bert C. and Harry C. Shanklin.

The Rubber Appliance Company, Springfield, Mass., has been incorporated under Massachusetts laws, with an authorized capital stock of $50,000, to manufacture an automobile wash basin and tank combined and other rubber appliances. The factory is located at the corner of Main and Worthington streets. The officers are: President and general manager, S. J. Rosenfelt and secretary and treasurer, D. E. F. Radasch.

The Chattanooga Implement & Mfg. Company, Chattanooga, Tenn., has prepared plans for the erection of a new molding room with about 20,000 square feet of floor space. It will be built of brick.

The Dana Mfg. Company, manufacturer of the Peerless Iceland freezers, Cincinnati, Ohio, has purchased a tract of land in Norwood, Cincinnati, next to the plant of the Weir Frog Company, the property comprising about 5 acres. It is the purpose of the company to build on this property a warehouse, machine shop, wood working shop, foundry, galvanizing and tinning plant. The plant is to be modern in every way, equipped with automatic sprinkler system, up to date machinery, &c. The Bert L. Baldwin Company of Cincinnati has been retained as engineer and architect on this proposition.

F. M. Foote, Marshall, Mich., has invented a new axle burr for buggies. Plans have not yet been formulated for the erection of a plant for the manufacture of the burrs. At present Mr. Foote is having them made at Grand Rapids, Mich.

The Automatic Screen Company, Grand Rapids, Mich., which was incorporated in November, 1903, with an authorized capital of $100,000, reports a rapidly growing trade. The company makes a patent roller screen and a patent shade roller. The shade roller does away with all screw devices and attaches the shade to the window by clamps at each end, the roller being in two pieces which when clamped on lock together in the center and hold in place without disfiguring the wood work. The officers of the company are: C. J. Perry, president; B. J. Perry, vice-president; Levi Strickler, Richmond, Ind., treasurer, and E. S. Ellis, Jr., secretary.

The Keyless Lock Company has been incorporated at San Antonio, Texas, for the manufacture of patent locks, machinery, &c. The incorporators are C. Katzenberger, Adolph Dreiss, Sr., and others. The company is incorporated for $250,000 and will build a plant just as soon as a site is selected.

Miscellaneous.

The McConnell Wheel & Mine Supply Company of Uniontown, Pa., has been consolidated with the Standard Company of Mehaffey, Pa., and the two concerns will be operated in the future under one management, with Fred. W. Ward as president and offices in the Farmers' Bank Building, Pittsburgh. The Standard Company manufactures mine cars and the McConnell Wheel & Mine Supply Company makes a specialty of the manufacture of car wheels and mine supplies and also the building of structural steel work.

The American Shipbuilding Company, Cleveland, Ohio, advises us that the report is untrue that it had secured a conract for two large ore vessels.

The plant of the Clark Safe & Vault Company, at Elizabeth, Pa., which has been idle for some months, has been sold to Kennedy Brothers of New York, and a new company to be known as the United States Safe Company will be organized with a capital of $1,500,000 to operate the plant. New machinery will be installed and probably some new buildings erected. The concern will also take on new lines of product consisting of automobiles, bicycles, sewing machines and high grade mining tools. The plant is expected to be put in operation in April, or not later than May 1.

The U. S. Brass & Specialty Works, South Bend, Ind., has been incorporated, with $10,000 capital stock, by Chas. T. White, Edwin P. Moore and Wm. H. Bierwith.

The steamer ordered by the Cleveland-Cliffs Iron Company, which will be turned out at the yard of the Great Lakes Engineering Works, Detroit, Mich., will be named William G. Mather, for the president of the Cleveland-Cliffs Iron Company. The steamer building at the same yard for the Presque Isle Transportation Company, Cleveland, will be christened Peter White. The steamers building at the Bay City yard of the American Shipbuilding Company for G. A. Tomlinson, Duluth, will be christened Sylvania and Socopa.

The United States Steel Corporation's Earnings.

After a meeting of the Board of Directors of the United States Steel Corporation, held January 31, the statement of earnings of the corporation for the quarter ended December 31 last was made public, showing that the net earnings for that period were $21,458,734. The statement, which was considered a very favorable one, is as follows:

Net earnings October, 1904		$7,250,204
Net earnings November, 1904		7,117,418
Net earnings December, 1904		7,091,112
Total after deducting expenditures for ordinary repairs, renewals, &c., interest on bonds, and fixed charges of subsidiary companies		$21,458,734
Less sinking funds on bonds of subsidiary companies	$468,967	
Less depreciation and reserve funds	3,916,160	
		4,385,127
Balance		$17,073,607
Deduct—		
Interest on United States Steel bonds for quarter	$5,922,850	
Sinking funds on United States Steel bonds for quarter	1,012,500	
		6,935,350
Balance		$10,138,257
Dividend for quarter on preferred stock		6,304,919
Surplus for quarter		$3,833,338
Surplus for preceding quarters, 1904		2,392,306
Total		$6,225,644
Less, charged off for employees' bonus funds, for adjustment of inventory valuations and sundry accounts		1,135,029
Balance undivided profits (held subject to appropriation for payment of construction and capital obligations)		$5,090,615

During the last quarter of 1903 the net earnings were only $15,037,181, so that the present statement shows an increase of $6,500,000 over that quarter. The biggest fourth quarter in any year since the organization of the Corporation was that of 1902, when the net earnings footed up $31,985,757, or about $10,000,000 more than those of the present quarter.

The unfilled orders on hand were 4,696,203 tons. Only once in the history of the Corporation have these orders been exceeded at this time of the year, and that was in 1902, when they were 5,347,253 tons. At this time last year they were only 3,215,123 tons. It is understood that since the close of 1904 the orders have been even heavier, and that for the month of January they will exceed even those of the banner year of 1902 at the corresponding period.

Charles M. Schwab will be honor guest and will make an address at the annual banquet of the Braddock Board of Commerce, to be held at the Braddock Club, Braddock, Pa., February 16.

Labor Notes.

The jury in a trial presided over by Judge Tuthill at Chicago last week sustained the contention of the attorney for the defense that under Illinois law a union had the right to boycott the business of an employer in order to win a strike, and the members cannot be prosecuted criminally for inducing dealers not to purchase goods from a boycotted concern.

The Supreme Court of Vermont has overruled the exceptions of the defendants in the case of the F. R. Patch Mfg. Company, Rutland, Vt., *vs.* Protection Lodge, No. 215, Machinists' Union of Rutland, and the verdict of the lower court that the union shall pay damages to the amount of $1500 is sustained. This case resulted from the strike of the machinists employed by the Lincoln Iron Works, which is located within the property of the F. R. Patch Mfg. Company. The latter company brought suit alleging conspiracy, because of the usual methods of picketing employed, which damaged the plaintiff's business and property. The suit was fought through the highest tribunal of the State by the Machinists' Union, because of the precedent involved, as well as because of the money damages.

The report printed in the Pittsburgh daily press last week to the effect that the plant of the Pittsburgh Steel Foundry, at Glassport, near Pittsburgh, was being operated as an open shop is incorrect. This plant is operated on a nonunion basis, and it will continue to be run in that way.

The annual report of D. H. McAbee, State Factory Inspector of Indiana, just made, shows that the general industrial conditions of the State were not as good last year as in 1903, the metal and wood working establishments showing a falling off in the number of employees. There was a decrease also in the glass factories. A recommendation is made that some law be passed governing the payment of wages, as it is alleged that some foreign corporations doing business in the State "literally rob their employees" of 10 to 20 per cent. of their wages by means of checks and discounts. It is also recommended that the present inspection law be applied to traction engines as well as to stationary boilers. The total number employed in factories in the State was 185,600. The number of workmen killed by accident in the factories was 0.02 per cent. of those employed.

There has been a rumor extant in Chicago that several deals were pending among members of the Metal Trades Association and the International Association of Machinists looking toward a settlement of the strike that was called last spring. A meeting of the Executive Committee of the Chicago Metal Trades Association has been called for the positive denial of the reports that have been promulgated. Secretary Wuest of the National Metal Trades Association has wired the secretary of the local organization the importance of placing printed notices in the shops of all the members denying any such deal to be pending.

Arrangements were made last week between James H. Nutt, labor commissioner of the Republic Iron & Steel Company, and T. J. Shaffer, president of the Amalgamated Association, for a conference to be held in Pittsburgh, February 2, to discuss certain amendments to the continuous wage scale agreement now in force between them. The company particularly desires some modifications as regards the time the arbitrators shall be appointed after June 30, if no scale agreement is reached prior to that time.

The S. Obermayer Company, Cincinnati, Chicago and Pittsburgh, has recently placed on the market the Esso Glutroid core binder, which is already being used in a number of foundries. It is used in the proportion of 1 part of the binder to 80 parts of core sand.

The Iron and Metal Trades

So far as fresh buying is involved the Pig Iron markets, generally speaking, have been rather quiet during the past week. In the Pittsburgh district Steel makers have not taken additional quantities, nor is it certain that the leading interest will purchase any notable quantities at once. The market has been pretty thoroughly cleaned up of speculative lots, only one small parcel of less than 3000 tons, offered at a shade under prevailing prices, having been marketed.

Eastern Steel makers have shown increased interest in supplying future wants, and sales aggregating about 25,000 tons have been consummated for delivery to the end of the year. Negotiations for further lots are pending.

The Steel market is narrow and strong in all the principal selling centers. Some of the rolling mills within moderate reach of tidewater have been testing the market for imported Steel, but find conditions adverse and prices high even for drawback tonnage. The German Coal strike is an uncertain factor in the international markets. Advices indicate that the German Steel works had some stock of fuel to draw upon, and appear thus far to have made their shipments regularly. The English makers are in a position to take care of requirements for the immediate future and show a disposition to do so at no marked rise in the price. However, it is believed by importers that had it not been for this danger of a curtailment of the supply it might have been possible to put through some business for this side.

Reports from the Steel Rail makers are better than they were. In the West some further large orders have been placed, Chicago reporting about 50,000 tons additional, which include 30,000 tons for a Northern transcontinental line. It is reported that the South Chicago mill has now booked an aggregate of 400,000 tons out of a total capacity of 750,000 tons. It is estimated that the mills in the pool now have about 1,000,000 tons on the books. Last year these mills shipped a little under 1,450,000 tons, which include Canadian and Mexican shipments, the official record of such exports having been 240,000 tons. This leaves a little over 1,200,000 tons as the record of last year of this particular group of mills. Besides this, of course, they contributed the balance of the exports, which aggregated 414,800 tons.

There is no hope whatever of selling to Canada this year under the antidumping clauses of the Canadian tariff, so that the Canadian Pacific order now up for consideration does not interest our makers. Last year under the stimulus of the rush to get in in time the exports to Canada were 216,800 tons. But even taking into account that this business is lost, the position of the Rail mills is very much better than last year, which will go down into the history of the Rail trade as the worst for a long period of years.

The activity in the Merchant Pipe trade has justified a further advance of $1 per ton and has brought about the placing of heavy orders for Skelp.

The Structural and Plate markets are quiet, no notable transactions having taken place.

The announcement will be made the trade to-morrow of an advance of $1 per ton on the whole line of Wire products.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Feb.1, 1905.	Jan. 25, 1905.	Jan. 4, 1905.	Feb. 3, 1904.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	$17.50	$17.50	$17.50	$14.50
Foundry Pig No. 2, Southern, Cincinnati	16.25	16.25	16.25	12.25
Foundry Pig No. 2, Local, Chicago	17.50	17.50	17.50	14.00
Bessemer Pig, Pittsburgh	16.60	16.85	16.85	13.85
Gray Forge, Pittsburgh	**16.10**	16.10	15.85	12.75
Lake Superior Charcoal, Chicago	18.50	18.50	18.50	16.75
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	**23.00**	23.00	22.50	23.00
Steel Forging Billets, Pittsburgh	25.00	25.00	....	....
Steel Billets, Philadelphia	**26.00**	25.00	25.00	24.00
Steel Billets, Chicago	25.00	25.00	25.00	24.00
Wire Rods, Pittsburgh	31.00	31.00	31.00	30.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	16.00	16.00	16.00	11.00
O. Steel Rails, Philadelphia	**17.50**	17.50	17.25	12.75
O. Iron Rails,, Chicago	*21.00*	21.00	22.25	16.00
O. Iron Rails, Philadelphia	**23.00**	23.00	20.50	15.50
O. Car Wheels, Chicago	*16.50*	16.50	16.75	13.50
O. Car Wheels, Philadelphia	**16.00**	16.00	15.25	13.00
Heavy Steel Scrap, Pittsburgh	*16.00*	16.00	16.50	13.00
Heavy Steel Scrap, Chicago	*14.50*	14.50	15.00	10.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.63½	1.63½	1.63½	1.35
Common Iron Bars, Chicago	1.65	1.65	1.65	1.40
Common Iron Bars, Pittsburgh	*1.65*	1.74¾	1.69¾	1.29¾
Steel Bars, Tidewater	1.54½	1.54½	1.54½	1.44½
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.30
Tank Plates, Tidewater	1.64½	1.64½	1.64½	1.74½
Tank Plates, Pittsburgh	1.50	1.50	1.50	1.60
Beams, Tidewater	1.64½	1.64½	1.64½	1.74½
Beams, Pittsburgh	1.50	1.50	1.50	1.60
Angles, Tidewater	1.64½	1.64½	1.64½	1.74½
Angles, Pittsburgh	1.50	1.50	1.50	1.60
Skelp, Grooved Steel, Pittsburgh	**1.55**	1.55	1.45	1.45
Skelp, Sheared Steel, Pittsburgh	**1.60**	1.60	1.50	1.52½
Sheets, No. 27, Pittsburgh	2.20	2.20	2.20	2.15
Barb Wire, Pittsburgh	**2.25**	2.20	2.20	2.50
Wire Nails, Pittsburgh	**1.80**	1.75	1.75	1.90
Cut Nails, Pittsburgh	1.75	1.75	1.75	1.70
METALS:				
Copper, New York	**15.25**	15.25	15.12½	12.25
Spelter, St. Louis	**6.05**	6.15	6.00	4.65
Lead, New York	*4.45*	4.45	4.60	4.40
Lead, St. Louis	*4.37½*	4.50	4.52½	4.30
Tin, New York	**29.65**	29.37½	29.05	27.50
Antimony, Hallett, New York	*8.50*	8.50	8.75	6.75
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.74	3.74	3.74	3.64

Chicago.

FISHER BUILDING, January 30, 1905.

A better feeling pervades the market than it did last week. The activity in the Pittsburgh district in large purchases of Pig Iron made there has greatly strengthened the feeling here and buyers are gradually reaching the conclusion that they can make no mistake by covering, up to the limit of their requirements, as far into the future as mills will permit, in all lines of raw and finished products. There has been no change in the price of Pig Iron here, but the situation is stronger than it was a week ago. Two of the largest local Pipe and Fitting interests and several large foundries have bought both Northern and Southern Pig Iron for delivery the second quarter, tonnages ranging from 1000 to 3000 tons per order. This business was placed on the basis of $13.50, Birmingham, or $17.15, Chicago, for Southern, and $17.50, Chicago, for Northern No. 2. The Billet situation is daily becoming more tense with one supply after another cut off by the fact that mills producing Billets are requiring their total tonnage for their own finishing departments. About 50,000 tons of Rails were booked last week by the local Western mill, of which one lot of 30,000 tons went to a transcontinental trunk line. Track supplies have been advanced in price. Demand for Structural Steel is good, though no large contracts were closed this week. A better feeling exists among makers of Plates, and already buyers are being warned by producers of Rails, Structural Steel and Plates that it is not at all improbable that we shall see a repetition of the congestion of 1902 and 1903, when these products were not obtainable for nearby delivery at any price except from European markets. The Sheet market is also in better shape and it is now the intention of the Inland Steel Company to start up its Sheet mills in March, or before then if improvements in the plant now

under way are finished in time. Buying is active in all Tubular goods. The Scrap market shows signs of recovering from the setback of the last two weeks. Coke is 25 cents stronger than it was a week ago. Wire mills are taxed to their utmost to supply present demand and are booked well into the future. Metals are weak, with very slight demand in evidence.

Pig Iron.—Trading has been more active than during the two weeks previous, and a number of the larger melters, notably Pipe and Fitting makers, have bought from 1000 to 3000 ton lots of Southern Iron on the basis of $13.50 for No. 2 at Birmingham, while a 1500-ton lot of Northern Foundry No. 3 Iron was sold at $17, Chicago, and a fairly large current business has been booked at the same basis of $17.50 for No. 2 Northern. The attitude of the furnaces is one of comparative indifference, as they already have on their books tonnages which will tax their producing capacity for some months to come. While it was doubtful some weeks ago that the present prices could be maintained, the actual consumption of Iron is increasing so satisfactorily that there is now but little doubt that Iron for the second quarter will rule fully as high as, if not from 50c. to $1 higher than, present prices. Thus far very little business is done for delivery beyond July, and it is problematical what prices for the third and fourth quarters will be, though the tremendous consumption of Pig Iron on the part of Steel producers gives credence to the belief that the second half of the year will see considerably higher prices than those prevailing in the first half. We repeat last week's quotations without change:

Lake Superior Charcoal	$18.50 to $19.00
Northern Coke Foundry, No. 1	.... to 18.00
Northern Coke Foundry, No. 2	.... to 17.50
Northern Coke Foundry, No. 3	.... to 17.00
Northern Scotch, No. 1	18.00 to 18.50
Ohio Strong Softeners, No. 1	19.30 to 19.80
Ohio Strong Softeners, No. 2	18.80 to 19.30
Southern Silvery, 4 to 6 per cent. Silicon	18.65 to 19.65
Southern Coke, No. 1	17.65 to 17.90
Southern Coke, No. 2	17.15 to 17.40
Southern Coke, No. 3	16.65 to 16.90
Southern Coke, No. 4	16.40 to 16.65
Southern Coke, No. 1 Soft	17.65 to 17.90
Southern Coke, No. 2 Soft	17.15 to 17.40
Southern Gray Forge	16.50 to 16.75
Southern Mottled and White	15.90 to 16.15
Malleable Bessemer	.... to 17.50
Standard Bessemer	18.50 to 19.00
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon	20.30 to 22.30
Jackson County and Kentucky Silvery, 10 per cent. Silicon	.... to 23.30
Alabama Basic	17.15 to 17.40
Virginia Basic	17.15 to 17.40

Billets.—The supply of Forging Billets grows less and less and a point has been reached where large Eastern producers are buying from local Western Steel works at $27 or above to fill Western orders taken months ago at $22 to $24. About the lowest price obtainable for Forging Billets in this market is $28, and prices range from there up to $32 a ton, according to the importance of the buyer to the seller. Bessemer Billets, which are officially quoted at $21 at Pittsburgh or $24, Chicago, are unobtainable here at less than $25 for base sizes, if at that price, and sales are reported as high as $27 and $28. Sizes larger than 16 square inches in section up to, but not including, 100 square inches are held at $2 premium over the base size.

Rails and Track Supplies.—The local Rail mill has booked another order for 30,000 tons from a Western road, besides 20,000 tons in smaller orders, making a total of nearly 400,000 tons of Standard Section Rails already booked for delivery from the South Chicago mill, while the maximum capacity of that mill does not exceed 750,000 tons. The demand for Light Rails is a little easier than it has been, but prices are well maintained on about the following basis: 8 and 10 lb. Sections, $28; 12-lb., $27; 16-lb., $26; 20 and 25 lb., $25; 30 to 45 lb. Sections, $24, all f.o.b. Milwaukee mill. Track Supplies rule considerably higher under stress of increased demand. The following prices rule in car lots, f.o.b. Joliet mill: Angle Bars, 1.40c. to 1.50c.; Spikes, 1.70c. to 1.75c.; Track Bolts, 2.40c. to 2.50c., base, with Square Nuts, and 10c. to 15c. higher for Hexagon Nuts. Store prices on Track Supplies range from 15c. to 25c. per 100 lb. above car lot mill prices.

Structural Material.—No orders of consequence for fabricated or erected structures have been placed within a week, but large tonnages are being figured on. Meanwhile a fair volume of unfabricated material is being ordered in car lots and greater. The large heavy Iron jobbing houses have filled up their yards and warehouses with this material in anticipation of higher prices and of a possible shortage. Quotations are unchanged as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.66½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.66½c.; Angles, larger than 6 inches on one or both legs, 1.76½c.; Beams, larger than 15 inches, 1.76½c.; Zees, 3 inches and over, 1.66½c.; Tees, 3 inches and over, 1.71½c., with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Local jobbers quote the minimum price on Angles, Beams and Channels, 1.90c., with 10c. advance for 18, 20 and 24 inch Beams and for Angles larger than 6 inches on one or both legs. These prices are for either random lengths or cut to lengths, but 10c. to 15c. higher is charged for very small or wasteful lots.

Plates.—Plates are stronger than they have been for three weeks, and mills are well filled up with business. In fact, orders already booked so far exceed producing capacity that there is some danger of shortage before the year is out. Official car lot prices at Chicago for shipment from mill are: Tank quality, ¼-inch and heavier, wider than 14 and up to 100 inches wide, carloads, Chicago, 1.66½c.; 3-16 inch, 1.76½c.; Nos. 7 and 8 gauge, 1.81½c.; No. 9, 1.91½c.; Tank quality, 6 to 14 inches wide, 10c. below these prices; Flange quality, any width up to 100 inches, 1.76½c.; Sketch Plates, in Tank quality, 1.76½c.; in Flange quality, 1.86½c. Store prices are as follows: Tank Plate, ¼-inch and heavier up to 72 inches wide, 1.90c. to 2c.; from 72 to 96 inches wide, 2c. to 2.10c.; 3-16 inch up to 60 inches wide, 2c. to 2.10c.; 72 inches wide, 2.25c. to 2.35c.; No. 8 up to 60 inches wide, 2.05c. to 2.15c.; Flange quality, 25c. extra.

Sheets.—While no official changes in prices have been made, independent mills are as a rule quoting prices higher than those named by the leading producer, and in some cases are getting them. The business is on a basis where little or no profit is possible to independent mills that must buy Sheet Bars at prevailing prices. As a consequence the large bulk of tonnage is going to the leading producer, which maintains the low prices in the face of a demand and cost of raw materials which might warrant considerably higher prices. Official prices named by the leading producer for car lots and greater at Chicago, delivered from mill, have as their minimum the following figures: Nos. 9 and 10, 1.81½c.; Nos. 11 and 12, 1.86½c.; Nos. 13 and 14, 1.91½c.; Nos. 15 and 16, 1.96½c.; Nos. 18 and 20, 2.21½c.; Nos. 22 and 24, 2.26½c.; Nos. 25 and 26, 2.31½c.; No. 27, 2.36½c.; No. 28, 2.46½c.; No. 29, 2.61½c.; No. 30, 2.71½c. Store prices rule as follows: Blue Annealed Sheets, No. 10, 2.05c. to 2.15c.; No. 12, 2.10c. to 2.20c.; No. 14, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Nos. 18 and 20, 2.45c. to 2.50c.; Nos. 22 and 24, 2.50c. to 2.60c.; No. 26, 2.55c. to 2.65c.; No. 27, 2.60c. to 2.70c.; No. 28, 2.70c. to 2.80c. Galvanized Sheets are unchanged but strong at the following net prices, f.o.b. Chicago, in car lots from mill: No. 16, 2.61½c.; Nos. 18 and 20, 2.76½c.; Nos. 22 and 24, 2.91½c.; No. 26, 3.11½c.; No. 27, 3.31½c.; No. 28, 3.51½c. These prices range from 75, 10 and 10 at Pittsburgh in the heavier gauges to 80 and 2½ in the lighter. Net prices quoted by local jobbers on Galvanized are as follows: Nos. 10 to 18, inclusive, up to 36 inches wide, 3c. to 3.10c.; No. 20 up to 30 inches wide, 3c. to 3.10c.; Nos. 22 to 24, 3.15c. to 3.25c.; No. 26, 3.40c. to 3.50c.; No. 27, 3.60c. to 3.70c.; No. 28, 3.85c. to 3.95c; No. 29, 3.75c. to 3.90c.; extras for Sheets wider than 30 inches are charged on gauges No. 20 and lighter, the extras varying with the widths and gauges. Such dealers as sell on the discount basis quote the following minimum figures: Nos. 10, 12 and 14, 36 to 48 inches wide, 75 to 75 and 10 per cent.; No. 16, 75 and 2½ to 70 and 10 per cent.; Nos. 18 and 20, 75 and 7½ to 70 and 10 per cent.; Nos. 22 and lighter, 70 and 10 per cent.

Bars.—Iron Bars and Bands are held at from 1.65c. to 1.70c., Chicago, in car lots, the higher price being charged only for badly mixed specifications. Soft Steel Bars and Bands are firm at 1.56½c., base, half extras, for either Bessemer or Open Hearth, and naturally at this low price the great bulk of the business is going to Steel, Iron mills getting only such business as is willing to pay a premium. Soft Steel Hoops are firm at 1.71½c. rates, full extras, in car lots; Soft Steel Angles, Channels, Tees and Shapes belonging to the Bar class, 1.66½c., half extras, Chicago, in car lots. Quantity differentials are added to the regular extras for size and for less than car lots, as follows: Less than 2000 lbs. down to 1000 lbs. of a size, 10c. extra; less than 1000 lbs. of a size, 30c. extra. Store prices on Iron Bars are held at 1.85c. to 2c., the bulk of the business being on the basis of 1.90c. Steel Bars and Bands from store are held down to 1.75c., base, half extras, by the attitude of one large producer, who has a warehouse connection here. Soft Steel Angles and Shapes, 1.85c., half extras; Soft Steel Hoops, 2.10c., full extras. On Soft Steel Bars, Angles, Shapes and Hoops from store 5c. or 10c. higher than these minimum prices are charged for small quantities.

Merchant Steel.—But little new business is being placed, as buyers have very generally covered their requirements up to next July, but specifications on contracts are said to be quite satisfactory and mills are running full. Prices are unchanged. Open Hearth Spring Steel is being held at 2c., Chicago, to the general trade. Other prices, based on the new Bar schedule of December 20, are: Smooth Finished Machinery Steel, 1.81½c.; Smooth Finished Tire, 1.76½c.; Flat Sleigh Shoe, 1.61½c.; Concave and Convex Sleigh Shoe, 1.76½c.; Cutter Shoe, 2.30c.; Toe Calk Steel, 2.11½c.; Railway Spring, 1.76½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up. Shafting is unchanged for the present at 52 per cent. discount in car lots and 47 per cent. in less than car lots in base territory.

Merchant Pipe.—Business is increasingly active, possibly under an impression that prevails that the leading producer might follow last year's precedent by naming an advance February 1. At this writing prices are unchanged in car lots to consumers from mill on the basis of the following discounts:

	Steel.		Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
⅛ and ¼ inch	66.85	50.85	64.85	48.35
⅜ and ½ inch	70.85	58.85	68.85	56.85
⅝ to 6 inches	74.85	64.85	73.35	63.35
7 to 12 inches	69.85	54.85	68.35	52.85
Extra strong, plain ends, ⅛ to ⅜ inch	59.85	47.85	57.85	45.85
½ to 4 inches	66.85	54.85	64.85	52.85
4½ to 8 inches	62.85	50.85	60.85	48.85
Double extra strong, plain ends	55.85	44.85	53.85	42.85

Boiler Tubes.—The advance in prices made January 19, amounting to about $4 a ton on Iron and Steel Lap Weld Tubes was naturally followed by a slight let up in buying, particularly as many of the larger buyers had anticipated the advance by covering well into the future. The Tube market is stronger than it has been for a long time, and mills are very comfortably filled with business. The official discounts on less than car lots, Chicago, for shipment from mill are:

	Steel.	Iron.	Seamless.
1 to 1½ inches	42.35	30.35	52.35
1¾ to 2¼ inches	54.35	39.35	40.35
2½ inches	56.35	44.35	43.35
2¾ to 5 inches	62.35	51.35	up to 4 in. 50.85
6 to 13 inches	54.35	39.35	....

Consumers who buy in car lots are officially quoted 2 points lower discounts, while jobbers are named prices that give them a merchandising profit. Independent makers of Lap Weld Steel and Seamless Tubes are taking business at from 2 to 4 points higher discounts in car lots.

New store prices on Boiler Tubes as announced in our last report are about as follows, though there is no agreement and no unanimity of prices between local jobbers as there once was:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	37½
2¾ to 5 inches	60	47½	45
6 inches and larger	50	..	..

Cast Iron Pipe.—South Bend, Ind., is in the market for 1000 tons of Cast Iron Water Pipe, bids to close February 8. Inquiries for smaller tonnages come from various quarters. It is thought that the big New Orleans contract will be let shortly, as buyers were required to have their bids in the City Engineer's office by January 31. Prices are firm at $28.50 a gross ton for 4-inch Water Pipe and $27.50 for 6-inch and larger, with $1 extra for Gas Pipe.

Old Materials.—No radical changes have taken place since last week. A few items have been advanced 50c. and several have been reduced 25c to 50c., leaving the general average the same as last week. The market is not particularly strong, but this is largely due to the fact that the leading consumer has not figured as a buyer for several weeks. The return of that consumer to the market will be the signal for higher prices. We quote per gross ton:

Old Iron Rails	$21.00 to $21.50
Old Steel Rails, 4 feet and over	15.50 to 16.00
Old Steel Rails, less than 4 feet	16.00 to 16.25
Heavy Relaying Rails, subject to inspection	22.50 to 23.00
Heavy Relaying Rails, for side tracks	20.00 to 20.50
Old Car Wheels	16.50 to 16.75
Heavy Melting Steel Scrap	14.50 to 15.00
Frogs, Switches and Guards	14.50 to 15.00
Mixed Steel	10.00 to 10.50

The following quotations are per net ton:

Iron Fish Plates	$19.00 to $19.50
Iron Car Axles	22.00 to 22.50
Steel Car Axles	16.50 to 17.00
No. 1 Railroad Wrought	17.50 to 18.00
No. 2 Railroad Wrought	16.00 to 16.50
Shafting	17.00 to 17.50
No. 1 Dealers' Forge	14.00 to 14.50
Wrought Pipes and Flues	12.00 to 12.50
No. 1 Cut Busheling	12.00 to 12.50
Iron Axle Turnings	12.00 to 12.25
Soft Steel Axle Turnings	12.00 to 12.25
Machine Shop Turnings	11.75 to 12.00
Cast Borings	9.00 to 9.25
Mixed Borings, &c	9.00 to 9.25
No. 1 Mill	9.75 to 10.00
Country Sheet	8.50 to 9.00
No. 1 Boilers, cut to Sheets and Rings	12.00 to 12.50
No. 1 Cast Scrap	13.50 to 14.00
Stove Plate and Light Cast Scrap	11.50 to 12.00
Railroad Malleable	14.00 to 14.50
Agricultural Malleable	13.00 to 13.50

Metals.—The tone of the market is extremely quiet and there is little or nothing doing. Prices, however, are maintained. Copper remains steady at 15⅛c. to 15¼c. for Casting, and 15⅜c. to 15⅝c. for Lake, in car lots, with ¼c. to ½c. higher for small lots. Lead is quoted in 50-ton lots at 4.45c., in car lots at 4.50c., and 5c. to 5¼c. in small lots. Pig Tin is unchanged at 30c. to 30½c. in car lots. Spelter is advanced for car lots, but unchanged for small lots, the car lot price being 6.15c., and the small lot price 6½c. Sheet Zinc is held at $7.50, base, Lasalle, equivalent after deducting discounts to $7.25, Chicago, for car lots of 600-lb. casks, with small lots selling at $7.50 to $8. Prices of Old Metals are unchanged, as follows: Copper Wire, 13¼c.; Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12¾c.; Red Brass, 11⅞c.; Red Brass Borings, 10c.; Yellow Brass, Heavy, 9c.; Yellow Brass Borings, 7⅞c.; Light Brass, 7¼c.; Lead Pipe, 4¼c.; Tea Lead, 4c.; Zinc, 4½c.; Pewter, No. 1, 19¼c.; Block Tin Pipe, 25c.

Coke.—Markets have strengthened to such an extent that we feel warranted in quoting $3 at the ovens as the minimum price for high grade Frick quality, Connellsville 72-hour Foundry Coke, or $5.65, Chicago, with some grades being held at a premium above this. At the same time Cokes of less reputation from the Connellsville region may be obtained as low as $2.75 at the ovens. Pocahontas and many brands of Virginia and West Virginia Cokes are quoted at from $2.50 to $2.75 at the ovens, plus $2.65 freight rate to Chicago. Wise County, Va., operations are so busy supplying Coke to the Birmingham Iron makers that a relatively small tonnage finds its way into the merchant field of the Chicago territory. What is sold here is sold on the basis of $3 at the ovens, which, with the low Louisville & Nashville freight rate, makes the price $5.25, Chicago. Furnace Cokes rule 25c. lower than the above quotations for Foundry, from practically all operations.

The Griffin Wheel Company, with its subsidiary interests, the Ajax Forge Works and the American Trading & Storage Company, has removed from the fifth floor of the Western Union Building, Chicago, to greatly enlarged quarters, occupying more than half the sixth floor of that building.

Cincinnati.

FIFTH AND MAIN STS., February 1, 1905.—(*By Telegraph.*)

Pig Iron.—The buying movement during the week that has just closed has been anything but pronounced. Inquiries have been light, the heavier consumers who influence the market to a large degree apparently being covered for some time to come. The market, while evincing no material signs of weakness, has probably reached the stage when some activity must be made manifest to maintain the ground already secured. We learn that there is a slight disposition among some of the larger producers to show signs of uneasiness at the slow progress being made, it being anticipated that by this time an immense increase in tonnage would have been the record. Southern furnaces are said to have contracted largely into the second quarter, but, as consumers are showing very little interest in the future, have made no contracts for a later period. Northern producers are in good shape as far as business is concerned, their order books being well filled for the second quarter's delivery, with buyers holding aloof for the last half. Prices which last week were possibly subject to some slight fluctuation are this week firmly established and represent the exact state of the market; $13.50 for Southern No. 2, Birmingham basis, is both maximum and minimum, as is $16, furnace, for Northern No. 2. The several Pipe interests throughout the State are reported as being crowded with work, and while they have probably covered for some weeks to come, are known to be willing and ready to secure any tonnage that may be available for their needs. We hear of one concern in the northern part of the State which bought about 4500 tons, composed of Gray Forge, No. 2 and No. 2 Soft; another industry located in central Ohio that bought about 2500 tons of Northern mixed grades and one of the leading Pipe companies about 2000 tons of Southern. We are advised that all of these sales were made practically upon the basis as quoted in this report. The Warner Furnace of Cumberland, Tenn., which blew out last summer during the dull season, expected to resume operations again this week. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	.... to $16.75
Southern Coke, No. 2	.... to 16.25
Southern Coke, No. 3	.... to 15.75
Southern Coke, No. 4	.... to 15.50
Southern Coke, No. 1 Soft	.... to 16.75
Southern Coke, No. 2 Soft	.... to 16.25
Southern Coke, Gray Forge	.... to 15.75
Southern Coke, Mottled	$14.75 to 15.00
Ohio Silvery, No. 1	20.65 to 21.15
Lake Superior Coke, No. 1	.... to 17.65
Lake Superior Coke, No. 2	.... to 17.15
Lake Superior Coke, No. 3	.... to 16.65

Car Wheel and Malleable Iron.

Standard Southern Car Wheel	$18.50 to $19.00
Lake Superior Car Wheel and Malleable	18.00 to 18.50

Coke.—Demand is good, prices are firm and supply is in excess of what it was a week since. There is apparently less shortage in the matter of cars and labor conditions are much better. Contracts are being filled more promptly, and the general situation is much improved. We quote, f.o.b. ovens, on the best grades of Connellsville Foundry from $2.75 to $3.

Plates and Bars.—Trade in this line is fairly active, the finished product about keeping pace with the raw material. Numerous new buildings calling for considerable tonnage are now being erected, showing considerable activity in Structural Iron. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.53c., with half extras; the same in smaller lots, 1.75c., with full extras; Base Angles, 1.63c., in carload lots; Beams and Channels, in carload lots, 1.63c.; Plates, ¼-inch and heavier, 1.63c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.73c., in carload lots.

Old Material.—The week has been comparatively quiet, with trade moving along in easy channels. Prices are reported to be firm and unchanged. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $17 to $18 per net ton; No. 1 Cast Scrap, $14 to $14.50 per net ton; Iron Rails, $21.50 to $22 per gross ton; Steel Rails, rolling mill lengths, $14.50 to $15 per gross ton; Relaying Rails, 56-lb. and upward, $23 per gross ton; Iron Axles, $21 to $22 per net ton; Car Wheels, $16 to $17 per gross ton; Heavy Melting Scrap, $14.50 to $15 per gross ton; Low Phosphorus Scrap, $17 to $18 per gross ton.

Philadelphia.

FORREST BUILDING, January 31, 1905.

The market during the past week has been duller than appears to have been expected, although considering the weather with all its inconveniences, business could hardly have been other than dull. There is no improvement yet, either in the weather or in business, but there is no material loss of confidence in the general conditions, although there is some possibility of continued dullness during the coming month, and may be a temporary weakening in prices. Be that as it may, there is a very fair movement, and the slight weakening in prices is not regarded as of any great significance. Buying cannot continue indefinitely, and as order books are in excellent condition, a few weeks of comparative inactivity will do no harm. It will, in fact, give an opportunity for taking new bearings and to determine what course to take as regards prices, costs and probable requirements during the remainder of the year. It would have been hard to convince any one a year ago that the consumption of Pig Iron during 1905 would at this time promise to be at the rate of over 20,000,000 tons, and that prices would be $3 per ton higher than they were then. One year ago at this date the estimate for consumption was placed at about 1,250,000 tons per month during 1904, and for at least two-thirds of that time that tonnage was the maximum. The improved conditions began to develop in October of last year, and have continued since then almost uninterruptedly, the pause at the present time being due to climatic and seasonable conditions, rather than to any unfavorable developments in the business situation. Nevertheless, it is hardly likely that there will be any great activity in the immediate future, which may perhaps be a good thing, as a premature movement would certainly not be desirable.

Pig Iron.—The market has not been altogether one sided during the past two or three weeks, and particularly during the last one. The advancing tendency has been pretty well checked and, while there are no evidences of a decline, weak spots can be found when they are looked for—and sometimes when they are not looked for. These, however, are mostly in the low grades, which are in disproportionate supply because of inferior Coke being used, the usual grade of Furnace Coke being so scarce that consumers had no chance to discriminate in their fuel. Apart from this, however, the demand for Pig Iron is not active. There is some business, however, and as deliveries are well taken the situation as regards foundry grades is at least steady. It would not take much to make it stronger or easier, the balance being very delicately poised and on a slight movement liable to change either way, as the case may be. Mill Irons are undoubtedly lower, $1 to $1.25 per ton from their best figures, but, as already stated, there are reasons which may account for the weakness without its affecting the general market. This, however, will require time to determine. There is no pressure to sell any of the grades at less than last week's quotations (Mill Irons excepted), so that for Philadelphia and nearby deliveries the range is about as follows:

No. 1 X Foundry	$17.75 to $18.00
No. 2 X Foundry	17.50 to 17.75
No. 2 Plain	16.75 to 17.00
Standard Gray Forge	15.50 to 16.00
Ordinary Gray Forge	15.25 to 15.50
Basic	to 16.50
Low Phosphorus	20.00 to 20.25

Steel.—There is a good demand and $26 is an inside figure for the very best class of business. Small orders are taken at $27 and upward, according to quantity and specification.

Muck Bars.—There is not much demand, but prices are steady, with buyers at about $29, f.o.b. seller's mill. Sellers ask a trifle more than that, but at the moment there is not much disposition to do business either as buyer or seller.

Plates.—The market is rather quiet as regards new business, but between specifications on old orders and the regular day to day demand mills are pretty well employed. There is nothing particularly new on the market, but the outlook is considered very favorable and likely to develop into considerable activity as soon as the weather becomes more suitable for outside operations. Prices are unchanged, as follows:

	Carload. Cents.	Part carload. Cents
Tank, Bridge and Boat Steel, over 14 inches wide	1.63½	1.68½
Tank, Bridge and Boat Steel, rectangular Plates, 14 inches wide and under	1.53½	1.58½
Flange or Boiler Steel	1.73½	1.78½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.83½	1.88½
Still Bottom Steel	1.93½	1.98½
Locomotive Fire Box Steel	2.13½	2.18½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Per 100
3-16-inch thick	$0.10 pounds extra.
Nos. 7 and 8, B. W. G.	.15 "
No. 9 B. W. G.	.25 "
Plates over 100 to 110 inches	.05 "
Plates over 110 to 115 inches	.10 "
Plates over 115 to 120 inches	.15 "
Plates over 120 to 125 inches	.25 "
Plates over 125 to 130 inches	.50 "
Plates over 130 inches	1.00 "

Structural Material.—No material change is seen in this department. There is a fair movement, probably as much as should be expected at this season, as the mills are running moderately full, with prospect of considerable improvement as spring approaches. Prices unchanged as follows: Beams, Channels and Angles, 1.63½c. to 1.75c., according to specifications, and small Angles, 1.55c. to 1.60c.

Bars.—There is a slight reaction from the extreme activity of the past several weeks, although there is no weakness in prices. Mills have a great deal of work on their books, and as specifications are coming in pretty well, there is no particular urgency for new business. Prices are nominally 1.63½c. for Refined Iron, but there are very few sellers at that price, nearly all the mills holding for 1.67½c. to 1.72½c. Steel Bars are firm at 1.53½c. to 1.60c.

Old Material.—This department of the Iron trade is extremely difficult to follow. There has been a noticeable absence of buying during the past two or three weeks and it was confidently expected that this would depress prices. To some extent it did just that, but the available supply of material is light, and as there is a demand for stock there are pretty good indications that it is more likely to sell higher rather than lower. Of course there is more irregularity than usual, because things that are wanted bring full prices, while those that are not in special demand are more or less nominal and may have to be sold at the bid price or may command the outside figure, according to which side makes the first move. To-day's bids and offers would be about as follows:

Old Steel Rails	$17.50 to $18.00
No. 1 Steel Scrap	17.25 to 17.75
Old Steel Axles	20.50 to 21.50
Old Iron Axles	23.00 to 24.00
Old Iron Rails	23.00 to 24.00
Old Car Wheels	16.00 to 16.50
Choice Scrap, R. R. No. 1 Wrought	21.50 to 22.50
No. 1 Yard Scrap	19.00 to 20.00
Machinery Scrap	16.00 to 16.50
Low Phosphorus Scrap	20.50 to 21.50
Wrought Iron Pipe	16.50 to 17.00
No. 1 Forge Fire Scrap	16.50 to 17.00
No. 2 Forge Fire Scrap, Ordinary	12.00 to 13.00
Wrought Turnings	14.50 to 15.00
Axle Turnings, Choice Heavy	16.00 to 16.50
Cast Borings	11.25 to 11.50
Stove Plates	13.50 to 14.00

Birmingham.

BIRMINGHAM, ALA., January 30, 1905.

The first gleam of light to penetrate the cloud of dullness that has in the opinion of some sellers characterized the Iron market of late appeared the past week, when some inquiries of very respectable volume were on the market. No business resulted. One of the inquiries was for 10,000 tons and another was for 7000 tons. They indicate a renewed interest in market conditions. Inquiries of this kind are generally the pioneers of a buying wave. While there has been neither an active market nor one where round lots were handled, the small buyers have been in evidence and their takings have kept the market steady.

We still hear of sales of some lots of No. 2 Foundry at $13.50, but, as was the case last week, we cannot confirm them. There are Western points that we cannot get at with any higher prices and there may have been a few sales at that price. Besides that, there has been some Iron on the market that deviated from regulation requirements as to grade. Such lots can always be shaded, and the reason why is not always told when the price is heralded.

Some No. 1 Soft was sold for second quarter delivery

at $14.50, and some No. 2 Soft went at $14. At that price some No. 2 Foundry also changed hands. There were sales of No. 3 Foundry for second quarter delivery at $13.25, and there was one sale of No. 4 Foundry for the same delivery, of 3000 tons, at the same price. There was no report of any sale of Gray Forge, but if any could be had it would easily bring $12.75. There is a growing disposition to broaden out on deliveries, but the movement has as yet but a slight headway. No sales have yet been reported for delivery beyond the second quarter.

The situation as to furnace output stands unchanged. It is about as stated in previous letter. We have a few furnaces now out that are making preparations to blow in if circumstances warrant, but there is as yet nothing certain in that respect. The anticipated circumstances may not materialize. With such interests it is not only a question of market value of Iron, but the ability to assemble the raw material in sufficient quantity to make a continuous run. Some of the furnaces now in operation have in this respect a trying time of it.

It is publicly announced that the parties from the East who have been endeavoring to accumulate sufficient of the stock of the Alabama Consolidated Coal & Iron Company to give them a dominating influence have succeeded by absorbing sufficient stock owned by Baltimore parties. It is understood that there will be no change made in the officials, but that there will be a change in the policy of the company. Its aim will be not only to turn out the crude Iron for the market, but to work it up itself into the finished products. This will be a long stride in the way of producing what will always be salable. There is talk of a Steel mill and other adjuncts to be erected, but if anything definite in this line has been determined upon the parties most interested are hiding well their intentions. The identity of the parties who have acquired the controlling interest is as yet withheld.

A very important question to be solved in connection with our industries is that of a steady, ample supply of water. There has been a deficiency in this respect and public sentiment is being aroused to take definite action. To increase the water supply to the desired quantity we will have to tap the Warrior River 20 or more miles away from us, and dig a canal to hold it and transport it. This means the floating of new bonds. The movement is as yet in its incipiency, but it is one that cannot be long delayed. It appeals to the pocket of every one interested in the prospective value of Birmingham property.

Great improvements concerning the Birmingham Railway, Light & Power Company have been ordered by the management, involving the expenditure of a considerable amount of money. It is estimated that $200,000 will be spent upon the enlargement and improvements at the power house alone, while the tracks from Powderly to Bessemer will be taken up and heavier rails laid. A viaduct at Bessemer over the railroad tracks will be erected and a station will be built of capacity sufficient to include the office force.

The Western Steel Car & Foundry Company, Anniston, has received orders for 1400 cars, nearly all for freight, over 1000 being for the Southern Railroad. All the roads having terminals here are busy securing their connections and switches with the various interests, and in some cases they have an eye to the old saying that possession is nine points of the law. They are fortifying their future rights by taking possession now.

Pittsburgh.

PARK BUILDING, February 1, 1905.—(*By Telegraph.*)

Iron Ore.—Very heavy sales of Iron Ore have been made for this year's delivery and it is said that 80 to 85 per cent. of the entire product of Lake Superior Ores mined by the independent companies has been sold. It is confidently expected that fully 25,000,000 tons of Ore will be brought down this year. Prices are about $3.75 for Old Range Ores and $3.25 for Mesabas at lower lake ports.

Pig Iron.—The market is quiet, with only a fair inquiry, and it is evident that large consumers are pretty well covered and are out of the market for the time being. It is generally believed here that the Steel Corporation will need some February metal, but as yet nothing official about this has been given out. We quote Bessemer and Basic Pig at $15.50 in large lots and $15.75 to $16 for ordinary tonnage, f.o.b. Valley furnace. We note a sale of 1000 tons of Basic Iron at $15.75 at furnace. Consumers who have Foundry Iron bought are urging prompt shipments, and the foundry trade outside of the Pittsburgh district is quite active. We quote Northern brands of No. 2 Foundry at $16 to $16.25, Valley furnace. There is very little demand for Forge Iron and Northern brands are held at $15.25, Valley furnace, or $16.10, Pittsburgh.

Steel.—The consumption of Billets and Sheet and Tin Bars is much heavier now than ever before in the history of the Steel trade, and the heavy demand is taxing the utmost capacity of the mills. Sheet and Tin Bars for prompt shipment command $2 to $3 a ton premium over official prices. We quote Bessemer and Open Hearth Billets up to 0.20 carbon at $23 to $24, and Sheet and Tin Bars in long lengths at $25 to $26, f.o.b. maker's mill. Forging Billets are held at $25 to $26 at maker's mill, depending on carbons.

(*By Mail.*)

At this time the important question comes up as to whether the United States Steel Corporation will need any February Iron, and while nothing definite regarding this will be known until next week, chances favor its purchase of a block of Bessemer or Basic. It is known that the Carnegie Steel Company is short of metal at nearly all its plants, and with the enormous output of its finishing mills the company is using up Pig Iron as fast as its blast furnaces can turn it out. In the Pittsburgh district this company has only three blast furnaces idle, these being one Isabella, one Lucy and one Donora stack. The latter furnace will be started Saturday.

While no large sales of Pig Iron have been made since our previous report, the market is quite firm, Bessemer and Basic Iron being held at $15.50 minimum at Valley furnace for large lots and $15.75 to $16 for ordinary tonnage. The Bessemer Pig Iron Association absolutely refuses to shade $16 at furnace for February and March shipment. The leading foundry interests are pretty well covered with Pig Iron for the next month or more and will not be in the market as buyers until March or later. There is a fair inquiry for small lots, and Northern brands of No. 2 Foundry are held at $16 to $16.25, Valley furnace. There is not much inquiry for Forge Iron, most consumers being covered. Northern brands are held at $15.25, Valley furnace, or $16.10, Pittsburgh. The Steel market continues active and Billets, Sheet and Tin Bars for prompt shipment are very scarce and readily command $2 to $3 a ton advance over official prices.

The tonnage in Finished Iron and Steel in January was not as heavy as in December, but this is explained by the fact that January is always a dull month in the Iron trade, and in addition the tonnage in Finished Iron and Steel placed with the mills in December was abnormally large, buyers covering themselves before the advance in prices. However, January tonnage made a fairly good showing and is expected to be much larger in February, as the spring trade in a number of lines opens up in that month. The only change in prices during the week was a reduction of one-half point in prices of Merchant Pipe by the National Tube Company and the other mills equal to an advance of $1 a ton. The demand for both Pipe and Tubes is referred to as being exceptionally heavy, the mills being well filled up and the market very firm.

Ferromanganese.—A continued active demand is reported, and we quote English and Domestic at $45, delivered, for large lots.

Rods.—We note a fairly active demand for Rods, and the high prices for Steel and difficulty in getting prompt deliveries are having the effect of holding up prices for Rods, which we quote at $31 to $31.50, Pittsburgh, for either Bessemer or Open Hearth.

Skelp.—This product is one of the most active on the whole list, and the mills are filled with tonnage and very firm in their ideas as to prices. Some heavy contracts for Iron Skelp have recently been placed by leading Pipe mills, with the result that some makers of Skelp are out of the market as sellers for the next several months. We quote Grooved Iron Skelp, 1.80c. to 1.85c.; Sheared, 1.90c. to 1.95c.; Grooved Steel Skelp, 1.55c. to 1.60c., and Sheared, 1.60c. to 1.65c. These prices apply on ordinary widths and gauges, f.o.b. cars maker's mill, terms 30 days, less 2 per cent. for cash in 10 days.

Muck Bar.—The demand has been quiet for some time and prices are not quite as firm as they have been. We quote best grades, made from all Pig Iron, at $28 to $28.50, Pittsburgh.

Steel Rails.—Inquiries the past week have been better, and upward of 100,000 tons have been placed, most of this going to the Lackawanna mill. The report that the Steel Corporation has taken a large order for Steel Rails for a new Siberian railroad is incorrect. The negotiations have been broken off and Colonel Hunsiker has returned to London. We quote Standard Sections at $28 at mill, and Light Sections at $23.50 to $25, depending on weight.

Structural Material.—The Structural trade is a little quiet, and no large contracts have been placed since our last report. The Wabash elevated work on Duquesne Way, this city, has been hung up indefinitely, that road deciding not to go ahead with the work until certain litigation has been re-

moved. We quote: Beams and Channels, up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.50c.; Angles, 8 x 8 and 7 x 3½ inches, 1.60c.; Zees, 3-inch and larger, 1.50c.; Tees, 3-inch and larger, 1.55c. Under the Steel Bar Card Angles, Channels and Tees under 3-inch are 1.50c., base, for Bessemer, and 1.55c., base, for Open Hearth, subject to half extras on the Standard Steel Bar Card.

Plates.—New tonnage is rather light, but specifications on contracts are coming in quite freely, giving the mills a fair amount of work. The Steel car companies are placing fairly large orders for Plates, with prospects for heavier tonnage from this trade very good. Prices are unchanged, and we quote: Tank Plate, ¼-inch thick, 6¼ to 14 inches wide, 1.40c., base; over 14 inches wide and up to 100 inches in width, 1.50c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges	$0.10
Gauges No. 7 and No. 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A.," and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ⅛ of 1 per cent. is allowable. Pacific Coast base, 1.40c. f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—New business in January was considerably less than in December, but this is accounted for by the fact that large consumers placed heavy contracts in December and specified very freely on these contracts during January. Shipments by the mills in January were exceedingly heavy and promise to be nearly as large in February. There is still some trouble in getting Sheet Bars and as high as $26, maker's mill, has been paid for Bars for prompt delivery. Prices are firm but unchanged, and we quote: No. 24, box annealed, one pass through cold rolls, 2.05c.; No. 26, 2.15c.; No. 27, 2.20c., and No. 28, 2.30c. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.75c.; Nos. 25 and 26, 2.95c.; No. 27, 3.13c.; No. 28, 3.35c. We quote No. 28 Gauge Painted Roofing Sheets at $1.65 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at $2.85 for 2½-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

Iron and Steel Bars.—The tonnage placed in both Iron and Steel Bars in the past week has been fairly heavy and, with contracts on their books, the mills are running full and making heavy shipments. The high price ruling for Iron Bars in this district has resulted in some Eastern Bars coming into the market. We quote Common Iron Bars at 1.65c. to 1.70c. and Refined Iron Bars at 1.80c. to 1.85c., Pittsburgh. We quote Bessemer and Open Hearth Steel Bars at 1.40c., base, in carloads and larger lots, with the usual advances for small lots.

Hoops and Bands.—There is no change in these, Steel Hoops remaining on the basis of 1.55c. and Bands 1.40c., base, extras on the latter as per Steel Card, f.o.b. maker's mill. A fair amount of tonnage is being placed and it is said these prices are being observed.

Tin Plate.—The mills are employed on contracts booked some time ago, much of the business being at lower prices than are now ruling. Indications are that the consumption of Tin Plate this year will be the heaviest ever known and the mills are anticipating a very large business. Tin Plate for spot shipment frequently commands slight premiums over the official price. We quote 100-lb. Cokes at $3.50 net, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in 10 days.

Boiler Tubes.—A fair amount of new business is being placed at the recent advance in prices, but most large consumers covered ahead for some time before the advance was made. Discounts on Boiler Tubes in carload lots are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1⅛ inches	43	46
1¾ to 2¼ inches	43	58
2¼ inches	48	60
2¾ to 5 inches	55	66
6 to 13 inches	43	58

Merchant Pipe.—Under date of February 1 the leading interest issued new discounts on Merchant Pipe one-half point lower on all sizes, which is equivalent to an advance of about $1 a ton. Some heavy contracts for Line Pipe are pending and all the Pipe mills are well filled up with tonnage for the next several months. The independent mills have also put into effect the higher prices just announced by the National Tube Company. Discounts to consumers in carload lots are now as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
⅛ and ¼ inch	68	52	66	50
⅜ and ½ inch	72	60	70	58
¾ to 6 inches	76	66	74½	64½
7 to 12 inches	71	56	69½	54
Extra strong, plain ends.				
⅛ to ⅜ inch	61	49	59	47
½ to 4 inches	68	56	66	54
4½ to 8 inches	64	52	62	50
Double extra strong, plain ends, ⅛ to 8 inches	57	46	55	44

Merchant Steel.—The new tonnage being placed with the mills was very much smaller in January than in December, and specifications on contracts are not coming in as actively as some time ago. However, the mills have a fair amount of work and prices are reasonably firm. We quote: Tire Steel, 1.60c. to 1.65c.; Smooth Finished Machinery Steel, 1.60c.; Open Hearth Spring Steel, 2c. to 2.10c.; Toe Calk, 1.90c. to 2c.; Cold Rolled Shafting is 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—The demand continues heavy, and we quote $1.65 to $1.70 per 100 lbs. in carloads, and $1.75 in less than carloads, f.o.b. Pittsburgh.

Spelter.—The market is easier, and prime grades of Western are held to-day at 6.05c. to 6.10c., St. Louis, equal to 6.17½c. and 6.22½c., Pittsburgh. No large sales have recently been made in this market, consumers buying only for immediate wants on account of the high prices ruling.

Connellsville Coke.—The output continues the heaviest ever known in the history of the trade, the product of the Upper and Lower Connellsville regions reaching about 325,000 tons per week, or more than 16,000,000 tons a year. Shipments are also the heaviest ever known, and the car supply is better than for some time. Prices continue firm, and $2.75 to $3 a ton, at oven, for best Connellsville Furnace Coke for prompt shipment is being freely offered. In the Upper and Lower Connellsville regions there are 29,111 ovens, and of these less than 1800 are idle. We quote strictly Connellsville Furnace Coke at $2.75 to $3 a ton for prompt shipment, and Connellsville 72-hour Foundry Coke at $2.50 to $2.75 a ton, at oven, on contracts. Some of the blast furnaces and foundries have contracts for Coke running up to July 1 at considerably less than the above prices.

Iron and Steel Scrap.—The sale of 15,000 tons of Heavy Melting Scrap by the Lackawanna Steel Company to the Carnegie Steel Company, for delivery at Sharon, Pa., and Newburgh, Ohio, has had rather a depressing effect on the Scrap trade and prices seem to be softer. A leading consumer outside of the Pittsburgh district has bought about 10,000 tons of Heavy Melting Scrap in the past week at prices ranging from $16.50 to $17, delivered. There is more pressure on the part of dealers to sell, and prices that would be entertained to-day would have been turned down two weeks ago. We quote: Heavy Melting Scrap, $16 to $16.50; No. 1 Wrought Scrap, $19.50 to $20; Bundled Sheet Scrap, $14.50 to $15; Cast Iron Borings, $10.50 to $11; Wrought Iron Turnings, $13.75 to $14; Steel Rails, short pieces, $16 to $16.50; No. 1 Cast Scrap, $15.50 to $16; Iron Car Axles, $23 to $24. All above prices are for gross tons, f.o.b. Pittsburgh.

Hickman, Williams & Co., T. Coleman Ward, resident manager, German National Bank Building, Pittsburgh, have been appointed exclusive representatives in the Pittsburgh district for Barnum, Richardson & Co. for the sale of their Salisbury Charcoal Pig Iron, made at Lime Rock, Conn. This Iron is especially adapted for the manufacture of Car Wheels, Cylinders and Rolls. They have also been appointed agents for the Pittsburgh district for Muikirk Furnace, at Muikirk, Md., for the sale of its high grade Charcoal Pig Iron. This Iron is largely used in Government work on account of its very high quality.

The L. K. Hirsch Company, New York and Chicago, dealer in Iron and Steel and Pig Iron Warrants, has opened an office at 2010 Farmers' Bank Building, Pittsburgh, with M. K. Frank in charge.

The Industrial Association of Cincinnati held its annual meeting at the Business Men's Club January 25. The executive session was preceded by a banquet, after which President Gibson called the meeting to order. Secretary Finch read his annual report, in which he stated that through the work of the bureau many important manufactories had been induced to locate in Cincinnati, especially adapted to the needs of the iron and steel trades. Other addresses were made and the needs of the association set forth.

Cleveland.

CLEVELAND, OHIO, January 31, 1905.

Iron Ore.—The heavy buying of Iron Ore has continued during the past week. It has been of the same general nature as that which had taken place for the two preceding weeks. All grades have been included. The buying has been so heavy that estimates of the total output have been revised of necessity. While it would be difficult, since the association no longer exists, to come at the actual amount of Ore sold to date, it is estimated by those in the trade that the buying has been sufficiently heavy to warrant the assertion that the total shipment by lake during the coming year will exceed 28,000,000 tons, while some make the estimate as high as 30,000,000 tons. There is no statement yet showing what rates will be paid for the transportation of this Ore. Lake tonnage has been on the increase and the dock facilities are increased also, while railroads are in better shape to handle the material. In addition, rates are made more on the possibilities of the larger boats than upon those of the smaller ones, and this may have a considerable influence upon the rates which will be paid during the ensuing year. This seems to argue that while the demand for tonnage, with such a heavy movement, will be large the rates will not be proportionately high. Prices have ruled about steady at $3.75 for Bessemer Old Range, $3.50 for Bessemer Mesaba, $3.25 for non-Bessemer Old Range and $3 for non-Bessemer Mesaba.

Pig Iron.—Some of the foundrymen of this territory have come into the market, making extensive inquiries on tonnage for delivery through the second half of the year. The business they present is rather extensive. The furnaces are discussing the advisability of making an offer on that business, but at present are not disposed to commit themselves for too long a period in future, especially on the present basis of prices. They realize that the present lull will more than likely prove purely temporary. Prices are a little easier, but it cannot be learned that any sales have been made at less than $16 for No. 2 Foundry in the Valleys. The Southern furnaces, having sold a few small lots in this territory, have withdrawn, having about supplied the demand. There has been a little buying of Bessemer at $16.50 in the Valleys, while Basic is sold at $16 to $16.50.

Finished Iron and Steel.—The only commodity in the Finished Material market which shows any signs of fluctuation is Bar Iron. The mills in this territory were getting on the ragged edge for business, due to the difference in price between their output and Bar Steel. With many of them it was impossible to produce at lower prices, since they had stocked themselves with high priced Scrap. At the low ebb in the Bar Iron business some of the larger buyers came into the market during the past week and bought. One concern took 2000 tons and several others took lots ranging from 1000 to 2000 tons. Since this business was of such a nature that it had to go to the larger mills they charged the high price of the market, getting 1.70c., Youngstown, for it. At that figure, however, they were compelled to guarantee the buyers against a decline. The smaller mills are still picking up the little business presenting itself at 1.60c. to 1.65c., Youngstown. There is not much buying in Bar Steel, but there are heavy specifications against old contracts. The buying of Structural Steel has been increased during the week. Cleveland's building trade is more active than it has been for a year. The specifications from the shipbuilders are heavy, but boiler makers and users of Plate generally are not very active just now, with the result that the Plate trade is a little quiet. The mills are so well filled up with orders for Structural Steel that quick shipments are out of the question and some of the consumers are forced to go to the jobbers for their material, paying stiff premiums for what is needed. The demand for Billets has not eased in any particular and the mills are still getting premiums. Some good sales have been made in Cleveland on both Bessemer and Open Hearth Billets of standard sizes at prices running from $26.50 to $27.50, Pittsburgh. The usual difference is made for Forging Billets. There is a steady business in Sheets. Mills are refusing to take more contracts at present prices, which are based on 2.50c. for Nos. 22 to 24 Black Sheets out of stock, while the same gauges in car lots at the mills are bringing 2.20c. There is steady buying of Light Rails, but only moderate inquiry for Standard Rails at steady prices.

Old Material.—Due to some new orders to Bar mills some better buying of Scrap is anticipated. This gave a good tone to the Scrap trade, which was getting weaker under the absence of any good buying. The whole market is, however, being shaded on sacrifice sales, but on big lots it is about holding its own on the basis of last week's quotations. We continue to quote, all gross tons: Old Steel Rails, $16 to $16.50; Old Iron Rails, $24; Old Car Wheels, $17; Heavy Melting Steel, $16 to $17. All net tons: Cast Borings, $8; No. 1 Busheling, $15; No. 1 Railroad Wrought, $19 to $20; Iron Car Axles (nominal), $20 to $21; No. 1 Cast, $14.50; Stove Plate, $11 to $12; Iron and Steel Turnings and Drillings, $12.50 to $13.

The Machinery Trade.

NEW YORK, February 1, 1905.

Events of the week in the machinery trade and happenings in the business world having an interest bearing upon the industry tend to materially strengthen the belief that better times are not only coming, but are actually close at hand. Despite the heavy storm, which crippled transportation considerably and might reasonably be expected to hamper business, the reports of the week show an excellent increase in activity. This applies more particularly to the machine tool trade than any other branch, although the influx of better conditions is felt in all quarters of the machinery industry. The branch which notes the least improvement is the high speed engine trade. Complaints are still to be heard in this quarter. Price cutting is still being indulged in and this is also the case with electrical machinery, which is usually sold in connection with the automatic engines. In the electrical field the slashing of values is said to be very much more severe, in fact. A large Western concern is reported in the trade as leading the war on prices. As an illustration of this a story is going the rounds in connection with the recent placing of an order for five 200-kw. generating sets in this market. The price at which the order was taken was extremely low both as to the engines and the generators. The generators, it is said, were taken at about $13.50 per kilowatt.

Advance in Prices of Pumps and Air Compressors.

The increasing activity in the machinery and allied lines of productive industry is indicated by a report that the International Steam Pump Company will on the first of the month advance all prices 10 per cent. This company operates plants at Harrison, N. J.; Boston and Holyoke, Mass.; Buffalo and Cincinnati, and controls the firms of Henry R. Worthington, the Geo. F. Blake Mfg. Company, the Knowles Steam Pump Works, the Snow Steam Pump Works, the Holly Mfg. Company, the Laidlaw-Dunn-Gordon Company and the Clayton Air Compressor Works, producing a large percentage of all the steam pumps, water works pumping engines, air compressors, condensers and other power plant and hydraulic machinery used in this country. Although the Henry R. Worthington branch recently more than quadrupled its manufacturing plant the latter is said already to be taxed to its full capacity, with a very large volume of work in sight.

Machinery and Supply Organizations.

Arrangements are quietly proceeding for the organization along association lines of at least a large portion of the machine tool dealers throughout the country. The matter is still in a very embryonic stage and no meetings have been held as yet with a view of actually organizing. Negotiations are on, however, with a view of calling a meeting of representatives of the dealers within a short time, and from what we learn from merchants in this city the movement promises to be carried out successfully.

The important dealers in machinery and railway supplies in this city met in New York on Monday last and set in motion the machinery of an association. The object is to organize along lines similar to the Southern Supply and Machinery Dealers' Association, which has as its principal purpose the cultivation of more friendly business relations between the dealers and the manufacturers, and to assist the latter to decide who are legitimate dealers and who are entitled to prices as such, as well as to discourage the manufacturers from dealing direct with consumers. In the case of the Southern Association, where a manufacturer finds it necessary to deal direct with the consumer, he must invoice the goods through some dealer in the territory where the goods are sold.

The Executive Committee of the Southern Supply & Machinery Dealers' Association held a meeting at New Orleans on the 16th and 17th insts. and made arrangements for the annual convention of the association, which is to take place April 25-28 inclusive at the De Sota Hotel, Savannah, Ga. The Executive Committee has appointed George V. Denny of the Georgia Supply Company, Savannah, Ga., as chairman of the Entertainment Committee, and J. J. Disosway of the Cotton States Belting & Supply Company, Atlanta, Ga., as chairman of the Transportation Committee. Favorable rates have been made with the De Sota Hotel, and the programme that has been adopted will be exceedingly interesting. The Executive Committee extends an invitation to all supply dealers to be present, and also to the representatives of the different manufacturers with whom the supply dealers do business. Indications are that this will be the most enjoyable and most largely attended convention that has ever been held by the association. Rooms at the hotel

are being engaged now by Eastern manufacturers, and a great many of them are going to bring their ladies with them. Savannah is one of the most beautiful cities of the South and in April will be seen at her best.

At the last annual meeting of the association held at Old Point Comfort last April a resolution was passed providing an honorary membership, to which manufacturers who are in accord with the policy of the association are eligible. Such members are not liable for membership fees or dues, nor are they entitled to attend any of the executive sessions of the main body. Upward of 250 manufacturers of machinery and supplies located in all sections of the country have availed themselves of this opportunity of affiliating with the dealers who handle their products in the South, and it is probable that a large number of them will attend the Savannah meeting.

Consolidation of Hoisting Machinery Companies.

The fact has become known that negotiations are on for the consolidation of the Brown Hoisting Machinery Company and the Wellman-Seaver-Morgan Company, both of Cleveland. The proposition looking toward a consolidation has been under discussion for over two years, and it is now stated that a common ground has been reached in the negotiations and that only a short time will elapse before a formal announcement is made. At this writing the negotiations have not reached any conclusion, although we understand that within a few days it will be definitely known whether they will terminate successfully or not. At one time it was intended to include other manufacturers of conveying machinery in the merger, but these plans have since been abandoned.

Important Machinery Inquiries.

Several very interesting machine tool lists were received in the trade during the week. The most important of these was issued by the Pennsylvania Railroad and covered a large number of tools to be installed at Olean, N. Y., and at Renovo, Pa. It will be recalled that in our issue of last week we mentioned the fact that an appropriation of $450,000 had been made by the directors of the road for the improvement of the company's shops at these points. The New York, New Haven & Hartford road has also sent inquiries out for a fair sized lot of machine tools, and it is believed that these are forerunners for a very extensive list which the company now has in preparation. The Philadelphia & Reading road has also a number of fair sized inquiries out and has just closed an official contract on its recent $75,000 list, the order being awarded to the Niles-Bement-Pond Company.

The American Locomotive Company is inquiring for a number of new tools, and the General Electric Company is also in the market at present with a good sized list of tools. In the case of the latter company it is expected in the trade that the requirements this year will be unusually large. Parties in the trade who have followed this concern closely state, in fact, that some very excellent orders may be looked for within the very near future. They state that the company has decided to now proceed with the complete equipment of its very large new turbine departments, which, as is pretty well known, have been held up, so far as the filling in of the machinery required is concerned, ever since the buildings were erected.

In another column an authentic report of the plans of the Bethlehem Steel Corporation for the improvement of its plant at Bethlehem, Pa., is printed.

The tip is going around in the trade that the American Smelting & Refining Company, 71 Broadway, New York, will soon be in the market with machinery equipment specifications of very good proportions. Report has it that the company has decided upon the construction of two new plants, one to be located in Mexico and one in Utah, and the extensive remodeling of one of its plants in Mexico.

Advices from Albany this morning state that it is officially announced that at least two, and possible three, of the six contracts for construction of the $101,000,000 barge canal will be let during the week. It will be recalled that this project was held up temporarily pending the opinion of the Attorney-General as to the possibility of legal entanglements.

Considerable interest is being taken in the trade in the report which is going the rounds to the effect that Harlan & Hollingsworth, Wilmington, Del., have decided to make improvements and extend their shipbuilding boiler plant. The reports have it that something like $300,000 will be expended in this work.

It is now reported that the Otto Gas Engine Works has definitely decided to locate in Wilmington, notwithstanding the fact that the city has refused to grant a gas franchise to the company. As previously noted, the company has purchased a site at Wilmington, and its plans for the new works are on a very extensive scale and will doubtless require a very large amount of new machinery.

Robert Hoe & Co., 504 Grand street, New York, will erect a large extension to their plant. The company has filed plans for a six-story brick structure, 139 x 200 feet, to cost $165,000. While nothing has been done as yet in the way of issuing specifications for machinery equipment for the new building, the purchases in this direction will soon be very extensive.

James Shewan & Sons Company, foot of Stanton street, New York, will soon decide upon the purchase of about $15,000 worth of machine tools. The company is equipping a new dry dock plant and has specifications out for a general line of shop equipment.

The Pittsburgh, Shawmut & Northern Railroad Company, St. Marys, Pa., is preparing plans for somewhat extensive improvements at that point. The engine repair shop, which was recently destroyed by fire, will be rebuilt, a natural gas engine and a compressor being the principal equipment to be installed immediately. It is also intended to build a wood working shop at St. Marys Junction in its present car repair shops, with a modern equipment of wood working machines and a natural gas engine and air compressor. The power to be required in the wood working shop will be from 60 to 100 horse-power. The list of machinery to be purchased has not been determined upon. H. S. Hasting, auditor and controller, is in charge of the work.

George F. Westcott Company, successor to the Power Installation Company, Buffalo, N. Y., is equipping a large new factory with very heavy machinery, which will enable it to take care of heavy electrical and dredge work. A considerable quantity of smaller sizes of machine tools has been purchased and orders for some of the large machines have already been placed. An order was placed with Edwin Harrington, Philadelphia, for one of his largest types of lathes, and a considerable quantity of the plate work machinery has been purchased from Long & Allstatter, Hamilton, Ohio. The new plant will be driven by induction motors throughout.

The Upton Motor Company, Lebanon, Pa., has purchased from the Keystone Machine Company the plant located at Twelfth and Walnut streets, Lebanon, Pa. The new company is now installing such modern machinery as is required for putting this plant in shape for the production of automobiles, motors, &c. General machine tools and special drilling machines for the manufacture and assemblage of automobiles will soon be purchased. H. T. Atkins is president of the company.

The F. B. Stearns Company, Cleveland, Ohio, manufacturer of gasoline automobiles, has commenced work on a two-story addition, 50 x 250 feet, which will practically double its output. The company is buying considerable new machinery and recently purchased from the Pattison Machinery Company, Cleveland, a Gisholt lathe, a Landis grinder, Bardons & Oliver turret lathe, two drill presses and other tools, and orders for additional equipment will be placed shortly.

In equipping its new English shops, where the steel cars for the London Underground Railway are to be built, the American Car & Foundry Company has purchased from the Ingersoll-Sergeant Drill Company its entire pneumatic equipment, including air compressors and Hæseler hammers and drills.

The A. S. Cameron Steam Pump Works, foot of East Twenty-third street, New York, reports the sale of three more of its horizontal piston pumps to the O'Rourke Construction & Engineering Company of New York City, contractor for the improvement in the Pennsylvania Railroad tunnel, delivery being made to the Manhattan side. The O'Rourke Company also has quite a number of Cameron pumps in use on the Weehawken side of the Pennsylvania tunnel and along the line of the improvements in the New York Central Railroad tunnel in New York City.

New Canadian Car Works.

The building of the Grand Trunk Pacific Railroad and the contemplated extensions to other railroads to tap the West and Northwest of Canada have given an impetus to the upbuilding of new industries, particularly those which are likely to derive much business from the railroad companies. This development is being mainly fostered by capitalists of the United States, who are furnishing a good part of the money for the construction of both the railroad and industrial plants. One of the first companies to see the advantages to be gained by having a plant to supply the needs of the railroads was the Pressed Steel Car Company, New York, which through its affiliated company, the Canada Car Company, already has under way work of construction of large car building works at St. Henri. The Canadians are alive to the situation and realize the fact that if they hope to hold their own business they must extend and modernize their plants so that they can successfully compete with the new enterprises projected by their Yankee neighbors. The entrance of the Pressed Steel Car Company into the Canadian field has probably more than any other one enterprise demonstrated to the concerns in that country which cater to the railroad trade the necessity of protecting their business by placing themselves in a position to secure and execute their share of the orders. In these days of large corporations and extensive works no small company can hope to get much of the large business, such as cars and locomotives, because it could not produce them in sufficient quantities to meet the railroad companies' requirements. With the view of meeting these conditions there has been

started among the car builders of Canada a well defined movement looking toward the consolidation of the companies and the erection of a large plant in which will be concentrated the work now done at the several car works. Thus far nothing definite has been decided and no details have been arranged, but from reliable sources it is intimated that the merger is practically assured. There are at the present time three car works in Canada, of which the more important are probably the Crossen Mfg. Company, Cobourg, and the Rhodes-Curry Company, Amhurst, N. S.

In connection with the activity displayed among the car works in Canada it will be interesting to note that the Simplex Railway Appliance Company of Canada, Limited, whose New York office is at 141 Broadway, has completed plans for the buildings and specifications for the equipment for its proposed new plant, which is to be erected at Lachine, where it purchased a site of 43 acres early in the fall. It is the intention to start building operations as soon as the weather will permit, and to this end contracts for the construction of the buildings will be let within the next few weeks. Into the new plant, which is to be more than double the size of the present one at St. Henri, the machinery now in use is to be moved, but in addition a quantity of new machinery is to be installed. The new equipment required has about been decided upon, and the company will be ready to make purchases in about three weeks. All contracts will be placed by the mechanical department at the main offices at St. James and Rose de Lima streets, St. Henri de Montreal. The products of the new works will be Simplex bolsters, side bearings, brake beams and structural steel used in the building of steel cars.

The American Steel Foundries has purchased the plant at Chicago and the business in the United States of the Simplex Railway Appliance Company, and hereafter the Simplex products will be manufactured in this country at the plants of the American company. The acquisition of the Simplex Company's business here in no way affects its plant or Canadian trade, which are handled by the Canadian corporation. In making the sale an agreement between the companies was reached whereby the American Steel Foundries will sell the Simplex appliances in the United States only and the Simplex Company will devote its entire attention to Canada.

Business Changes.

The Prentiss Tool & Supply Company announces that it has been appointed selling agent for the line of shapers and gear cutting machines produced by Gould & Eberhardt of Newark, N. J. This changes the selling arrangement of these tools in the respective territories adjacent to New York, Boston and Buffalo.

The Marine Engine & Machine Company, whose plant is located at Harrison, N. J., has now acquired the sole manufacturing and selling rights of the Secor oil and gas engines. For the purpose of actively exploiting this engine offices and warerooms have been opened at 126 Liberty street, New York, where arrangements are now being made to have an exhibition plant in operation. E. E. Pollock, sales manager, is in charge of the new offices and has associated with him Walter E. Powers, who for several years has been well known in the machinery trade through his former connections with the La France Fire Engine Company. J. A. Secor, consulting engineer for the company and inventor of the engine, is also making his headquarters in New York. This engine was formerly controlled by the General Power Company, who had it built under contract by the Marine Engine & Machine Company.

The Lima Locomotive Machine Company, Lima, Ohio, has appointed Motley, Green & Co., 68 Broad street, New York City, as sales agents for the New York district and foreign markets. The company is now purchasing light weight locomotives for plantations, mines and industrial works, in addition to its former extensive line of logging engines, &c.

New England Machinery Market.

WORCESTER, MASS., January 30, 1905.

The Boston machinery dealers in totaling their sales for January find the amount fully twice what it was during the same month of 1904, which is not at all surprising, but is eminently satisfactory, especially as there is every indication that the increase will hold its own through the months to come and perhaps will show even better comparisons. There is plenty of business in sight, and the trade is very cheerful.

The one fly in the ointment is the condition of the engine lathe business, and to a lesser extent that on milling machines and larger sizes of planers. The lathe market has been well cleaned out by the sweeping purchases of a foreign Government (Japan), and deliveries, as a rule, are not better than 60 days, and longer time is required in some cases. The best that can be had in the Boston market is 30 days, though there may be some exceptions to this rule. Recent railroad purchases have pretty well cleaned up the heavy planers that the builders had in stock, and the demand for milling machines has been brisk.

The railroad shops of New England have not as yet given signs of large purchases, though the New York, New Haven & Hartford is looked to for considerable orders of new machinery for the Readeville works.

The demand for all classes of engines and pumps is brisk and the manufacturers are busy. This is especially true of the manufacturers of combustion engines, especially for farm purposes and other kindred uses, apart from the demand for traction and marine purposes.

The one exception to the rule of manufacturing prosperity in the metal lines in New England is the builders of cotton machinery, who are very dull and doing very little buying of machine tools. With the cotton market in the condition that has characterized it for the past year it was to be supposed that the demand for new machinery would be light, and such is the case.

A New Planer Company.

The Chandler Planer Company, Ayer, Mass., will erect a new shop in that town for the manufacture of the new Chandler metal planer. The initial building will be 80 x 125 feet, with high monitor roof and galleries, in which the lighter tools will be placed. The shop will cost about $20,000. The company announces that it will be in the market for about $30,000 worth of machine tools. Work on the new shop will begin as soon as possible and it will be rushed to be ready for occupancy at the earliest possible moment, as the company has orders in hand for a considerable number of planers and the capacity of the present shop is limited. The company has been incorporated under Massachusetts laws with a capital stock of $300,000, divided equally between preferred and common stock. The officers are: President, Charles S. Edgarton, Concord, Mass.; treasurer and general manager, George J. Burns, Ayer, Mass.; superintendent, Daniel L. Chandler, Ayer, Mass.; directors, these officers, and Alonzo N. Burbank, Newton, Mass., treasurer of the International Paper Company; A. S. Paton, Leominster, Mass.; Congressman Charles Q. Terrill, Natick, Mass.; Andrew J. Woodward, Pepperill, Mass.; Michael Sheedy, Jr., Groton, Mass., and George H. Brown, Ayer. The company has in hand orders for planers from the Fore River Shipbuilding Company, the General Electric Company, New York Central Railroad, Stanley Mfg. Company, Lawrence, Mass., and Ludwig Loewe, Berlin, Germany.

The firms of William T. Wood & Co., Arlington, Mass., and Gifford Bros., Hudson, N. Y., manufacturers of ice tools, have been consolidated and incorporated as the Gifford-Wood Company. The business books of the corporation opened February 1. The main office will be at Hudson, where the foundry work and heavy manufacturing will be done, while the forging and skilled labor of finishing will be done at the Arlington shops. The forge shop at Arlington, which was destroyed by fire recently, will be rebuilt immediately. While the details are not wholly decided, the building will probably be 45 x 130 feet and will be equipped with the most modern machinery and conveniences. The officers of the new corporation are: President, William E. Wood; vice-president, Malcolm Gifford; treasurer, Arthur Gifford; assistant treasurer, William B. Wood; secretary, A. E. Heard.

The Robb-Mumford Boiler Company, Incorporated, 170 Summer street, Boston, Mass., which is about to build large works at South Framingham, Mass., for the manufacture of the company's internally fired boilers, states that it is in the market for a considerable amount of new machinery. As previously noted in *The Iron Age*, the main building will be 150 x 300 feet, and in addition there will be a pattern shop the dimensions of which are not yet determined. The office building will be 40 feet square and two stories. The buildings will be of steel and concrete.

The Ball Mfg. Company, Stamford, Conn., has taken considerable additional space in the building occupied by its shops, the increase being made necessary by large orders for automobile engines and mechanism, received from a New York company.

The American Heater Company, Worcester, Mass., has been incorporated under Massachusetts laws with authorized capital stock of $140,000, to manufacture the Nemo down draft stove. The company has not completed its plans for manufacturing. The officers are: President, Lawrence V. K. Van De Mark; treasurer, Edgar E. Buck; clerk, James E. L. Tood, all of Worcester; directors, Messrs. Van De Mark and Buck, and Daniel E. Wormwood, Chelsea, Mass.; Howard De W. Sawyer, Everett, Mass.; Pliny E. Bassett, Curtis S. Yeaw and Edwin Hawes, of Worcester.

The Stanley Electric Mfg. Company and the General Incandescent Arc Light Company, constituent companies of the General Electric Company, have been consolidated under the name of the Stanley-G. L. Electric Mfg. Company, the change going into effect February 1. All the manufacturing will be done in the present works of the Stanley Company at Pittsfield, Mass. The officers of the new corporation are; President, United States Senator W. Murray Crane; first vice-president, C. C. Chesney; second vice-president, M. D. Barr; third vice-president, M. J. Insull; treasurer, R. S. Murray, and secretary, M. F. Westover.

Chicago Machinery Market.

CHICAGO, ILL., January 30, 1905.

Adams & Schwab, Chicago, who have charge of the mechanical and engineering features of the new plant of Sears, Roebuck & Co., Chicago, will soon purchase 6000 horsepower water tube boilers, together with stokers and superheaters to correspond. Bidding closed to-day and awards will doubtless be made this week or early next. Specifications have been issued by the same firm for a brick and concrete stack 220 feet high, 14 feet inside diameter. Modern coal and ash handling apparatus will be installed by the same firm of engineers and specifications are now being prepared for bidders. Much attention is being paid by the firm and its engineers to haulage and transfer systems to be used between the various departments of the plant and for loading and unloading cars. The exact plans have not yet been decided upon, but the engineers are desirous of securing information and data from all builders of systems of this character. The heating, ventilating and fire protection contracts will also be large ones. The engineers are not yet ready to announce further plans for power, though it is understood from unofficial sources that steam turbines rather than engines will be employed. The requirements for generators, motors and dynamos will be large. The present plans are for a plant intended for the storage and shipment of merchandise only, as it is not intended that manufacturing shall be done there. The whole plant, exclusive of realty, will cost over $5,000,000 and will embody the latest ideas in ventilation, sanitation and other provisions for safeguarding the health and comfort of employees. It will include a large club house with gymnasium, swimming pool, baths and provisions for amusement.

The Otis Elevator Company, Chicago, has purchased land at Houston, Texas, and will build on it a small factory early in February. Provision will be made in building the plant for extending it as needed. The tools will all be electrically driven, the current for the motors to be supplied from the city plant. The purpose of installing this plant is that orders for Texas and the South may be filled promptly.

Kaplan & Felton, Owatonna, Minn., who have just opened a new plant under the name of the North Star Iron Works, are in the market for one engine lathe, about 28 or 30 inch swing, with 16 or 20 foot bed; one press drill, about 14 or 16 inch swing; one shaper, one milling machine, one key seating machine. The above equipment may be second hand if of improved types and in good running order. The firm has already purchased an engine lathe, a drill press and a boring mill. These improvements are the result of an increasing business and the anticipation of a record breaking output this year.

E. E. Chandler, secretary and treasurer of the Leland Boat & Supply Company, Leland, Mich., has purchased an old iron plant and valuable water power right which he will convert into a manufacturing plant for the building of various kinds of water craft. He is in the market for iron and wood working machinery.

The Hawkeye Cabinet Company, manufacturer of kitchen cabinet, Webster City, Iowa, is enlarging its factory. Two engines, one boiler, a 24-inch double surfacer, wood turning lathes, two rip and one cut off saw, double spindle shaper, mortising machine, band saw and other small machines used in cabinet work have been purchased and are now being installed.

The Wisconsin Chair Company, Port Washington, Wis., is erecting a three-story factory in that city and will purchase improved wood working machines.

The Pathfinder Electric & Water Power Company, which filed articles of incorporation for $100,000 in December last, expects to erect a power house half way between Scottsbluff and Gering, Neb., which cities are 3 miles apart, and to develop 400 to 500 horse-power. The two cities are to be connected with a trolley line and these, together with four villages aggregating 3500 population, are to be furnished with electric lights. Power will also be supplied to local milling and manufacturing projects. The company has already acquired or arranged for rights of way, franchises, site for power house and has given some contracts for power, but will need a complete system of turbines, dynamos, electric transmission lines, appliances, alternators, exciters, belting, poles, wires, insulators, transformers, braces, cross arms, incandecent and arc lamps, and ties and rails for 3 miles of track, one combination passenger and baggage car and one motor car. G. L. Shumway, Scottsbluff, Neb., is secretary of the company.

A merger of southern Michigan electric companies has been consummated, the resultant company to be known as the Commonwealth Company, with offices at Jackson, Mich. A $100,000 electric power plant will be erected. E. C. Nichols, Battle Creek, Mich., is vice-president.

The North Fork Lead & Zinc Company has organized at Neck City, Mo., with J. T. Roberts as vice-president and general manager. The company is in the market for a 100 horse-power boiler and one 4-inch discharge duplex pump.

The electric light plant at Osceola, Iowa, is to be enlarged in the near future and a 24-hour service will be started. A central heating plant will also be installed in connection. An engine and generator will be installed in addition to the equipment for the heating plant.

Abel & Bach Company, manufacturer of trunks, Milwaukee, Wis., purpose commencing the erection about April 1 of a five-story warehouse, 150 x 180 feet. The contemplated additions to the factory also include one complete power plant, with boilers and large engine, together with dynamo and motors to run the machinery.

The Kessler Machine & Supply Company, San Diego, Cal., which has just installed a power plant, is in the market for a dynamo and necessary wire for a shop lighting plant.

The Hogeland-Barrett Mfg. Company, manufacturer of automatic high water pressure check valves, Indianapolis, Ind., is asking for bids on a new plant which is to be built early in the spring.

Washington University, St. Louis, Mo., will erect three new buildings at a cost of $275,000, to be used for Smith Academy, the manual training school and shops. The smallest of the three buildings will cost $20,000 and will be built before work on the other two has begun, in order that it may be used for a storeroom and as a workshop for mechanics. The two largest buildings will be each four stories in hight, similar in construction, and will provide accommodation for from 600 to 650 students. Heat for the buildings will be furnished from an electric light plant to be installed in the basement of the manual training building. Each building will cost approximately $130,000.

The Menasha Paper Company, Menasha, Wis., will erect a paper mill at Ladysmith, Wis. Plans are yet in an embryonic state, but it is expected that about 350 horse-power in steam power and the same horse-power in water power will be required.

The large horizontal boring and milling machine which was on exhibition at the St. Louis Fair by the Niles Tool Works of Hamilton, Ohio, has been purchased by the Great Lakes Engineering Works of Detroit, Mich. This tool is one of the largest of its kind in the United States, and is to be used by the Great Lakes Engineering Works on its marine engine and ice machinery work, of which it has very large orders.

The Philadelphia Machinery Market.

PHILADELPHIA, PA., January 31, 1905.

Conditions in the Philadelphia machinery market during the past week have largely been a repetition of the previous one. Inquiries have in some instances improved in number, but not very largely, as the aggregate amount of machinery and tools required at the moment is small. No specifications of any size have come out, no new railroad business has developed except in the locomotive field, and matters on the whole are quiet.

The recent heavy snow storm which this section of the country experienced has stopped outside work for the time being and will therefore mean the withholding of immediate business developing from that class of work.

Most of the sales during the past week have been of the smaller class of tools, and these in small lots for a number of different customers. The larger plants have a fair amount of work on their books, a few are booked up to their present capacity, but all could accommodate considerably more work if it was forthcoming. The smaller machine tool manufacturers probably feel the absence of immediate orders to a greater extent, but all are very hopeful of the ultimate recovery of business. Next month, in the opinion of the trade, should indicate the volume of prospective business with greater accuracy, although considerable new work will probably not come out until later in the spring.

There is a little more activity in the foundry trade, particularly those making machinery castings, but there is plenty of room for improvement even in that field.

The Gately & Hurley Company, Camden, N. J., are asking bids on the construction of a five-story warehouse 40 x 120 feet. The building is to be of brick and of the slow burning construction type.

The Belmont Iron Works has awarded to the Charles McCaul Company the contract to erect its new plant at Eddystone, Pa. The Belmont Iron Works will itself furnish all the structural steel work required on the operation. This contract has been held over for some time, but it is now expected that work will begin at once and be rushed to completion. All the various machinery and tools, except pneumatic tools and some small and incidental machinery, has been already contracted for.

The Ferguson-Killon Company, 612 Betz Building, has been incorporated with a capital stock of $100,000. The incorporators are Frank Ferguson, Daniel Killon and B. F. Maloney. The new concern will engage in the buying and selling of new and second-hand engines, boilers and electrical machinery.

Ernest Law & Co., 516 Harrison Building, have asked for

bids from the various car building companies on 500 40-ton hopper cars for service in the coal trade. The order has not at yet been awarded.

The Energy Elevator Company, 411 Cherry street, Philadelphia, is in the market for an 80 horse-power portable boiler, 100 pounds pressure, Philadelphia inspection, and an air compressor, capacity about 250 cubic feet at 80 to 100 pounds pressure.

The Baldwin Locomotive Works has booked orders during the week for a number of engines, including 75 for the Atchinson, Topeka and Santa Fé Railroad, consisting of Atlantic, Pacific and Santa Fé types of engines. An order for nine locomotives, three ten-wheel freight, one switching and five consolidation engines for the new Tonopah Railroad was also received. The Pennsylvania Railroad also took an option on 200 locomotives, in addition to their present orders for 350. Deliveries on these, if finally ordered, would begin after present orders are completed. The Baldwin Works, while nearly always in the market for various machinery and tools, advise us that at the present time their needs are small, as under the present conditions of business they still have a large percentage of idle machines.

J. R. Richards, who was formerly connected with the Philadelphia branch of the Fairbanks Company, has now become associated with Manning, Maxwell & Moore, and will look after their machinery interests in southeastern Pennsylvania, Delaware and Maryland, making their Philadelphia office headquarters.

The Tabor Mfg. Company has received orders for six power ramming machines for the Syracuse Foundry Company, Syracuse, N. Y., to be used on job work; two hand ramming, tripping plate machines for the Wheeler & Wilson Company, Bridgeport, Mass.; six machines, four power and two hand ramming, for the United Shoe Machinery Company, Beverly, Mass., and a 36-inch square, power ramming vibrator machine for the American Locomotive Company, Schenectady, N. Y. Stove foundries have given duplicate orders for machines, and the general outlook for business is considered most favorable.

The Philadelphia Roll & Machine Company received during the past week orders for 36 heavy housings for rolling mill machinery, as well as orders for a number of both sand and chilled rolls. The demand for rolls has been large, and it has been operating its plant to its full capacity on that class of work.

Cincinnati Machinery Market.

CINCINNATI, OHIO, January 30, 1905.

The past week in machinery circles has been fairly active, and, generally speaking, a good normal condition prevails. Foreign demand is somewhat on the increase, while the domestic situation is very much improved. We are advised of one large shipment being sent to Finland and a consignment of 12 machines to a British manufacturer of ordnance. This latter was a rush order, the exact significance of which we were unable to learn.

Great activity is developing in the building line, and a number of plants will very materially increase their facilities during the early spring. The J. A. Fay & Egan Company has purchased a strip of ground adjoining its plant at Front and John streets, this city, on which it will erect a six-story warehouse building. This will be of concrete construction and be 80 x 180 feet. It will rearrange a part of the machinery now in use and purchase new with which to equip the additional floor space. For this purpose Clifford Eagan and Mr. Robinson, superintendent of the plant, will go East about March 1. They expect to expend about $50,000 for this new equipment.

Francis X. Pund, who for the past 16 years has been connected with the Queen City Supply Company, has severed his connection with that company and has taken service with the D. T. Williams Valve Company, recently incorporated in this State. Mr. Pund is vice-president of the company, whose headquarters are on Broadway and Egglestone avenue. The company has its equipment all installed and is now ready for business.

The American Auto Company of this city was incorporated last week. It is now looking for a site on which to erect a plant. The incorporators are M. M. Robertson, A. J. Smith, N. L. Emerson, W. F. Hames and E. T. Horstman. Capital stock, $200,000.

The Cincinnati Iron Fence Company, a Kentucky corporation, has been admitted to Ohio, to locate in Cincinnati. The company has $10,500 capital, which will be employed in Ohio.

The Regal Belting Company of this city has been incorporated with a capital of $25,000.

The P., C., C. & St. L. Railway Company is negotiating with a view to establishing a foundry near this city. There is a prospect that the Dennison Rolling Mill building may be utilized for this purpose.

The Caldwell & Drake Iron Works of Columbus, Ind., will soon begin the erection of an addition to its plant.

The Cincinnati Northern Traction Company has been incorporated with a capital of $500,000 for the construction of an electric line from Cincinnati to Toledo.

A company has been organized at Urbana, Ohio, C. H. Ganson, president, which has purchased the local light plant of that city. The entire plant is to be remodeled and replaced with new machinery as rapidly as possible.

The Remmes Soap Company is now at work making extensive improvements at its plant on Harrison avenue. The power capacity of the plant will be greatly increased.

The D. T. Williams Valve Company has now completed the installation of all the machinery necessary for the production of its new line of brass check, angle and gate valves at the company's plant, 906-910 Broadway, Cincinnati, Ohio. All of the machinery is of the latest type and especially adapted to the work required of it. The plant consists of a three-story brick structure 150 feet on Broadway, 150 feet on Eggleston avenue and intersecting at Court street. Direct connection is obtained with the Pennsylvania Railroad, so that with the facilities offered for both shipping and manufacturing the company is now in shape to take care of all orders promptly.

The Hisey-Wolf Machine Company, owing to the rapid growth of its business and the increasing demand for its electrical driven grinders, drills and other tools, has been compelled to secure larger quarters. The site selected is located on Spring Grove avenue in the machine tool manufacturing district, where a plant especially adapted to the company's requirements has been erected. The new works will be fitted up with all the latest tools and appliances necessary for rapid and economical manufacture and facilitating the prompt shipment of all orders. An office will be opened at 120 Liberty street, New York City, to expedite the transactions of the company's Eastern business.

Government Purchases.

WASHINGTON, D. C., January 31, 1905.

During the last week the new system of navy purchases went into effect, with the consequence that the several naval pay officers throughout the country have been issuing typewritten specifications and closing contracts for a much larger quantity of supplies than heretofore. Owing to the fact that no provision has been made for an increased force at each of the pay offices the work has already piled up to the extent that a great deal of confusion is threatened. Considerable time will be required to straighten matters out, and much delay is anticipated, which will tend to further complicate matters. As we predicted some weeks ago, the forces at the naval pay offices are wholly unable to attend to the additional work properly, and as a result but few typewritten copies of the specifications are distributed. It is quite necessary therefore for those who desire to bid on all appliances they make to call each day at the navy pay offices in their respective territories. One of the important developments in the new system is the wide latitude given the various pay offices in the length of time allowed for submitting bids. We understand that the utmost limit is a week, and not infrequently only a couple of days are given for the preparation and submission of bids. There is now a great deal more being contracted for at the separate pay offices than the regular emergency purchases and it looks as if a still wider field will be covered in the near future. The working of the new system with the present facilities will undoubtedly lead to the securing of the bulk of contracts by a select few closely in touch with the pay offices.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 28 for the following machine tools for the Portsmouth, Boston, New York, Washington, Norfolk and Pensacola navy yards:

Schedule 63, engine lathe, centrifugal pumping sets, radial drill, planer, band saw and knife grinder.

Schedule 64, deck winches, milling machine, gear cutting machine and drilling machine.

Schedule 65, saw table, boring machine, scroll saw, band saw filer, band saw setter and retoother and shear.

The Isthmian Canal Commission, Washington, will receive bids until February 15 for two stone crushers of the gyratory type, both to be similar or equal in size and capacity to the Nos. 8 and 5 Gates crushers, respectively.

The Navy Department has rejected all bids for the cold storage plant at the New Orleans Naval Station and will call for new offers. This will be done as soon as the Bureau of Yards and Docks can revise the specifications.

The American Road Machine Company, New York, has been awarded the contract for a stone crusher bids for which were opened by the Isthmian Canal Commission, Washington, on January 25. The following bids were submitted:

Austin Mfg. Company, New York, $835.

Julian Scholl & Co., New York, $889.36.

American Road Machine Company, New York, $645.50 without revolving screen and $757.50 with revolving screen.

J. E. Kennedy, New York, $898.50.

Under bids opened December 20 for supplies for the various navy yards the following awards have been made:

Pensacola, Key West and New Orleans.

Drew Machinery Agency, Manchester, N. H., class 18, four brass foundry furnaces, $207.

Manning, Maxwell & Moore, New York, class 19, four diaphragm bilge pumps, $54.96.

Platt Iron Works, Baltimore, Md., class 20, one duplex boiler feed pump, $51.70.

Geo. F. Blake Mfg. Company, New York, class 21, five duplex vertical steam pumps, $240.

Rumsey & Co., Seneca Falls, N. Y., class 22, one portable electrically driven centrifical pump, $754.65.

Richard W. Geldhart, New York, class 23, one concrete mixer, $509.95.

Fox Brothers Company, New York, class 24, one double cylinder double friction drum hoisting engine, $734.

Mare Island and Puget Sound.

Henshaw-Buckley Company, San Francisco, Cal., class 1, one compressed air locomotive, one air compressor, one receiver or reservoir, &c., $7056.

Compressed Air Machinery Company, San Francisco, Cal., class 3, one 24-inch engine lathe and one 220-volt alternating current motor, $1210.40.

New York.

NEW YORK, February 1, 1905.

Pig Iron.—There has been only a moderate demand in this section and none of the larger founders have been in the market. While some weakness in Forge Pig and in the lower grades has been noted, standard grades continue firm. We quote: Northern Iron, at tidewater, $17.75 to $18 for No. 1 X Foundry; $17.25 to $17.50 for No. 2 X Foundry and $16.75 to $17 for No. 2 Plain. Alabama and Tennessee Irons are quoted at $17.50 to $17.75 for No. 1 Foundry and $17.25 to $17.50 for No. 2 Foundry.

Steel Rails.—In the tidewater markets only one sale of a moderate quantity to a Coal road is reported, but there has been a good deal of activity in other sections.

Cast Iron Pipe.—Seasonable quiet characterizes this branch of trade. No important lettings are at present in sight in this territory. Prices are very firm on the basis of $26.50 to $27 per net ton for carload lots of 6 and 8 inch, at tidewater.

Finished Iron and Steel.—Although a great deal of business is in prospect, as reported at some length last week, sales of Structural Material are light, no contracts of importance having been placed. The American Bridge Company is pushing its new works at Ambridge, Pa., further toward completion, and now rates the producing capacity of this plant at 10,000 tons of finished product per month. This will be increased, by the installation of additional machinery, to 12,500 tons within a few months, and by the end of the year, if not earlier, the capacity will be up to 20,000 tons. The company is thus getting in good shape to handle a greatly enlarged amount of business this year. The report is without foundation that the company intends to build a plant in the Birmingham district. The demand for Plates and other finished products is not active at present, but prospects are bright, and it is expected that this month will see considerable improvement. Quotations at tidewater are as follows: Beams, Channels, Angles and Zees, 1.64½c. to 1.80c.; Tees, 1.69½c. to 1.80c.; Bulbs, Angles and Deck Beams, 1.74½c. to 1.85c.; Sheared Plates, in carload lots, 1.64½c. to 1.75c. for Tank, 1.74½c. to 1.90c. for Flange, 1.84½c. to 2c. for Marine, 1.84½c. to 2.50c. for Fire Box, according to specifications; Refined Bar Iron, 1.64½c. to 1.69½c.; Soft Steel Bars, 1.54½c. to 1.64½c.

Old Material.—Consumers are only buying from hand to mouth, except the foundrymen, who are eagerly taking all the Cast Scrap they can secure. Some very good sales are reported of Machinery Scrap at prices slightly above our quotations of last week. The rolling mills are endeavoring to depress prices of Busheling Scrap by staying out of the market, but here and there one is found whose necessities compel it to make purchases. In this way some transactions have occurred in Wrought Pipe and Cast Borings, but the trade has been limited. Large inquiries are in the market for future delivery. The offers which are made by consumers thus inquiring are so little below the present market that they do not seem to fear much of a falling off in trade as spring opens. Car Wheels are in strong demand, but the supply is very short. In fact, all kinds of Old Material are scarce. Quotations per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails	$21.50 to $22.50
Old Rails, rerolling lengths	16.00 to 17.00
Old Steel Rails, short pieces	15.00 to 16.00
Relaying Rails	20.00 to 21.00
Old Car Wheels	17.50 to 18.50
Old Iron Car Axles	22.00 to 23.00
Old Steel Car Axles	19.00 to 20.00
Heavy Melting Steel Scrap	15.00 to 16.00
No. 1 Railroad Wrought Scrap	18.00 to 19.00
No. 1 Yard Wrought Scrap	17.00 to 17.50
Iron Track Scrap	16.50 to 17.00
Wrought Pipe	14.00 to 15.00
Ordinary Light Iron	10.50 to 11.50
Cast Borings	8.50 to 9.00
Wrought Turnings	11.50 to 12.50
No. 1 Machinery Cast	16.00 to 16.50
Stove Plate	13.50 to 14.00

The offices of the president and chairman of the Board of Directors of the Bethlehem Steel Corporation have been established on the fourth floor of the Empire Building, 71 Broadway, New York City. The New York sales offices will be maintained at 100 Broadway.

The Mesta Machine Company.

The Mesta Machine Company, Pittsburgh, Pa., whose plant is at West Homestead, Pa., is building a new power plant, which when completed will contain eight boilers of 2000 horse-power capacity. They will be fitted with automatic stokers and electric driven coal handling machinery. The engine room, when complete, will contain two 400-kw. generators direct connected to Mesta Corliss engines, and two 200-kw. generators direct connected to gas engines, also two air compressors. The plant will be large enough to furnish power for future extensions, which will consist of a new foundry department on property recently purchased from the American Bridge Company. The first 200-kw. machine will be put in operation this week.

The outlook for business this year is regarded as very bright. Within the last 60 days the company booked some very large contracts, among them being one from the Tennessee Coal, Iron & Railroad Company for a 5000 horse-power vertical and horizontal compound Corliss engine, which will be used to drive rail mills; also a stand of 28 inch, three-high pinion housings fitted with machine modeled nickel steel pinions. This engine will replace the one now in use. When this engine is installed, which will be in four or five months, the Tennessee Company expects to greatly increase its present output of rails. The Mesta Company also has a contract from the Tennessee Company for a 44 x 84 x 60 inch blowing engine, which will be a duplicate of the 18 blowing engines furnished the same company by the Mesta Company during the past two years, all of which are in successful operation. The Mesta Company also has a contract from the National Enameling & Stamping Company for six cold rolling mills and a 28 x 48 inch Corliss engine and gear drive, the gears for which will be machine molded and made of nickel steel, and a contract from the Illinois Steel Company for a 28-inch structural mill, consisting of three stands. All the principal parts of the Illinois mill, including the housings, will be made of cast steel. From the same company has been received a further contract for a 32-inch, two-high, reversing blooming mill, including tables, manipulator, &c. This mill will be used as a roughing mill for the structural mill. Also will be furnished six roll lathes, four 42-inch and two 50-inch, all motor driven, to be used for turning the rolls of the structural mill.

Iron and Industrial Stocks.

NEW YORK, February 1, 1905.

Some interesting movements have occurred during the week. In anticipation of a very good statement of earnings for the last quarter by the United States Steel Corporation the common stock, which sold at 28⅞ on Thursday of last week, advanced to 31⅛ on Tuesday of this week; the preferred advanced from 92¼ to 95¾, and the new 5's from 93⅛ to 94¼. Colorado Fuel was another stock which made a good advance, rising from 44 to 48. American Locomotive moved upward, following the announcement of the absorption of the Rogers Locomotive Works, the common advancing from 33½ to 38 and the preferred from 105 to 111⅞. Pressed Steel showed strength, the common advancing from 35¾ to 38¼ and the preferred from 89 to 92¼. Tennessee Coal was marked up from 68½ to 73¼. Some of the stocks selling on the "curb" also manifested considerable activity during the week. Prominent among these stocks was Central Foundry, the common touching 5 and the preferred 24½ on Tuesday, which are new high records for a number of years. The stock of the new Bethlehem Steel Corporation, the successor to the United States Shipbuilding Company, is now being traded in on the curb, sales on Tuesday having covered about 2000 shares of the common at 29½ to 30 and 1300 shares of the preferred at 88 to 89. Last sales of active stocks up to 1.30 p.m. to-day were made at the following prices: Can common 9⅞, preferred 61¾; Car & Foundry common 33½, preferred 93; Locomotive common 36¾, preferred 107¾; Steel Foundries common 16, preferred 62½; Colorado Fuel 47¼; Pressed Steel common 36¾, preferred 91½; Railway Spring common 33⅞, preferred 94; Republic common 16½, preferred 68⅜; Sloss-Sheffield common 61, preferred 102; Tennessee Coal 72; United States Steel common 30¼, preferred 94⅝, new 5's 93⅞.

It is reported that the output of the General Electric Company since the month preceding the Presidential election has averaged something above $4,000,000 a month, or at the rate of $48,000,000 a year. The previous year's output of $41,000,000 was the largest year's business up to that time.

The Herring-Hall-Marvin Safe Company reports for the calendar year 1904 a net profit of $35,297, after charging off $18,678 for maintenance and $15,277 for depreciation. A new factory was constructed during the year at Hamilton, Ohio, and a new branch opened in Chicago. During the year production was curtailed somewhat, with consequent smaller margin of profit. The present year opens with a good demand and better prices. There are now outstanding $190,000 gold debenture notes. The good will account is put at $2,176,642. The capital stock amounts to $3,300,000. The annual meeting of the company will be held in Jersey City February 9.

Stockholders of the Burns Uniform Steel & Metallic Company, Lewis Block, Pittsburgh, with tool steel works at Latrobe, Pa., have authorized an issue of $25,000 in bonds to provide working capital.

The American Steel Foundries have sold to Kuhn, Loeb & Co., New York, about $1,000,000 of long time notes on a favorable basis as part payment for the purchase of the Simplex Railway Appliance Company. The financial requirements of the company are thus provided for, while the railroad sales departments are strengthened with the addition of the Simplex organization.

Dividends.—The preferred stock of the Wheeling Steel & Iron Company, Wheeling, W. Va., advanced last week to $130 bid. This concern declared another 2 per cent. dividend on January 21, payable at once, making the full 8 per cent. dividend due last year. The annual meeting of the stockholders of the concern was held on Tuesday, January 24, and it is understood the annual report submitted at the meeting for last year's operations was very satisfactory to the stockholders.

Page Woven Wire Fence Company, Monessen, Pa., paid a dividend of 2½ per cent. on the preferred stock February 1. Sales of the company during 1904 are said to have exceeded $4,000,000, being the largest in any one year in the history.

The Buckeye Steel Casting Company, Columbus, Ohio, held its annual meeting last week and paid a quarterly dividend of 2½ per cent. February 1. It was decided to expend about $60,000 in increasing the capacity of the plant. The old Board of Directors was re-elected.

United States Steel Corporation has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable February 28. Books close February 7 and reopen March 1.

Pressed Steel Car Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable February 23. Books close February 2.

American Radiator Company has declared a quarterly dividend of 1¾ per cent. on the preferred and 1 per cent. on the common stock, payable February 15 and March 31, respectively.

Belfont Nail & Iron Company, Ironton, Ohio, has declared the semiannual dividend of 5 per cent.

Pittsburgh Gage & Supply Company, Pittsburgh, manufacturer of steam specialties and rolling mill supplies, has declared the regular quarterly dividend of 2 per cent.

Hamilton Machine Tool Company, Hamilton, Ohio, paid the regular quarterly dividend of 1½ per cent. on the preferred stock February 1.

Metal Market.

NEW YORK, February 1, 1905.

Pig Tin.—Owing to unusually small arrivals during the last week, and, consequently, a scarcity of spot stock, the market has ruled very firm during the week under review. The firmness was especially marked on spot prices. To-day the market is very much unsettled. Spot is quoted 29.65c. to 30c., February is 29c. to 29.25c., March, 28.50c. to 20c., and April is 28.25c. to 29c. The London market also shows an advance, being £131 12s. 6d. for spot and £130 10s. for futures. The arrivals during the month of January amounted to but 2820 tons, while the deliveries into consumption are figured at 3400 tons. About 4675 tons are afloat, of which it is predicted the greater portion will arrive here during the first two weeks of February.

Copper.—The market continued in its dullness, showing no interesting feature. Prices are unchanged and as follows: Lake, 15.25c. to 15.37½c.; Electrolytic, 15.12½c. to 15.25c., and Casting, 14.87½c. to 15c. The London market shows a slight advance at £67 17s. 6d. for spot, £68 1s. 3d. for futures and £71 for Best Selected. The exports for the month of January amount to 19,694 tons, against 29,085 tons for the corresponding period of last year.

Pig Lead—Remains unchanged here, but is slightly lower in St. Louis. Spot is quoted here 4.45c. to 4.50c., while St. Louis telegraphs 4.37½c. The American Smelting & Refining Company still quotes 4.45c. on Desilverized in 50-ton lots, shipment 30 days.

Spelter.—The market is quiet and no decline in prices is to be noted. Spot Spelter was quoted at the close at 6.20c. to 6.30c. Shipments from the West are offered at 6.15c. The St. Louis market is unchanged at 6.15c. London cables show a slight decline, at £24 15s.

Antimony.—Prices are unchanged as to the leading brands, and the market closed with Cookson's ruling at 8.50c. to 9c. and Hallett's at 8.50c. to 9c. Other brands show a decline of ¼c., at 7.37½c. to 8c.

Quicksilver.—The London market is a shade lower and was quoted to-day at £7 12s. 6d. The market here is firm and unchanged, flasks of 75 lbs. being quoted at $40.

Nickel.—Business is of about the usual proportions and prices are without change, large lots being quoted at 40c. to 45c. and smaller quantities at 50c. to 60c.

Tin Plates.—A moderate amount of new tonnage is being placed with the mills, but the mills are so well sold up on old contracts at lower prices than are now ruling that they are unable to take care of very much new business and to make prompt deliveries. For this reason Tin Plate for prompt shipment sometimes commands a premium of 10c. or more a box from the regular price. All the manufacturers are holding prices firmly, and the recent resales by speculative interests at prices somewhat lower than those ruling have not weakened the market to any appreciable extent. The American Sheet & Tin Plate Company quotes on a basis of $3.74 a box for 14 x 20 100-lb. Coke Plates, f.o.b. New York, or $3.55, f.o.b. Pittsburgh. The Welsh market is 1½d. lower, at 12s. 3d., f.o.b. Swansea.

We are indebted to L. Vogelstein, American representative of Aron Hirsch & Sohn, Halberstadt, Germany, for the following figures of the German consumption of foreign Copper for the months of January to November, 1904, compared with the same period of time for 1903 and 1902:

	1904. Tons.	1903. Tons.	1902. Tons.
Imports	107,364	80,093	74,183
Exports	8,145	9,328	8,188
Consumption	99,219	70,765	65,995

Out of the above 90,845 tons were imported from the United States. Mr. Vogelstein further gives the following figures regarding the German consumption of Copper. As no figures were available for the month of December, the consumption of the 11 months has been added and an additional one-eleventh added for the month of December, and the following approximate figures for the year 1904 are arrived at. As a basis for the figures until the end of November the German statistics for the foreign trade are used and a computation table for 1903 is used for comparison:

	January-November, 1904. Tons.	Whole year. Estimated, 1904. Tons.	Whole year. 1903. Tons.
Importation.			
German statistics:			
No. 508, copper	101,722	110,969	83,260
No. 509, copper coins and copper scrap	5,642	6,154	5,533
No. 510, brass and scrap brass, 2,792 tons at 66 2-3 per cent.	1,819	1,984	1,313
No. 294, copper ore (estimated)	7,445	3,000	4,268
No. 297, pyrites: Portugal, 82,856 tons; Spain, 374,089 tons, at 2½ per cent.	11,423	12,461	12,413
Imports	....	134,568	106,787
Exports.			
German statistics:			
No. 508, copper	3,840	4,189	4,332
No. 509, copper coins and copper scrap	4,305	4,696	5,667
No. 510, brass and scrap brass, 5,239 tons at 66 2-3 per cent.	3,492	3,809	3,682
No. 294, copper ore (estimated)	14,332	1,000	937
Exports	....	13,694	14,618
Figures of Domestic Production.			
Importation		134,568	106,787
Less exports		13,694	14,618
Production		120,874	92,169
Copper disposable		30,000	30,149
Total production		150,874	122,318
To deduct for the importation of copper ore and pyrites		6,500	6,000
Home consumption		144,374	116,318

The New York Pig Iron Warrant Market.

The Pig Iron warrant certificate market was very quiet the past week, but few sales being reported.

On the New York Produce Exchange the following prices were established on call Wednesday noon:

	Bid.	Asked.
February	.....	$16.50
March	.....	16.50
April	$16.50	16.75
May	16.50	16.75
June	.....	16.60
July	.....	16.50

HARDWARE.

WHILE not much has been heard of late from the Joint Committee of wholesale and retail merchants appointed to advise and act in the catalogue house matter, it is not to be assumed that the committee regards its work as accomplished or has lost any of its enthusiasm and enterprise. It may perhaps be said that the first part of the work which it laid out for itself is pretty well accomplished—namely, dissuading manufacturers from selling catalogue houses, or if this position cannot with wisdom be taken, to induce them to use their influence to see that their goods are quoted by such houses at reasonable prices. In this endeavor the committee's efforts have been attended with remarkable success, as indicated by the long list of names of representative manufacturers who have expressed themselves as in accord with its plans. The catalogue houses, too, are apparently turning in other directions for the supply of goods in certain lines. In comparatively few instances, when the multiplicity of wares which they handle is considered, are they attempting to cover their wants by the control or establishment of factories, a matter which obviously involves a good deal of uncertainty and, while presenting certain ostensible advantages, is surrounded at the same time by difficulties and disadvantages. All this shows that the desire on the part of manufacturers not to sell these houses is making the carrying on of the mail order business more difficult than it has heretofore been, a condition the credit for which is to be given both to the committee, with the merchants represented by it, and the manufacturers who have with a good deal of unanimity taken a position which commends itself to the trade. The primary work of the committee may thus be regarded as very satisfactorily and successfully performed.

The task which is before it is, however, more difficult. It is well known that the catalogue houses were enabled to get on their feet and subsequently to attain their extraordinary growth from the service of the jobbing trade not only in the great cities where they made their headquarters but at other points whence they could make arrangements to draw their supplies. In this way little by little they attained their growth until such time as they could with greater advantage purchase directly from the manufacturers, so that at length the jobbing trade realized that by thus selling catalogue houses they were imperiling their own interests and those of their customers, and within the past year or two the leading houses especially have been active in maintaining the policy of refusing to sell these mail order houses. In taking this position they are to be credited with pursuing a wise course, as some of them at least have been willing to give up a considerable volume of profitable business in recognition of the general interests of the trade and the disfavor with which retail merchants regard wholesale houses that continue to supply catalogue houses. There are, however, many stores through which there is a possibility that these houses can obtain goods, and the committee recognizes that its next and most important work is to induce the wholesale merchants to refuse to be the channel through which the goods which the manufacturers and the great jobbers decline to sell are obtained. This part of the committee's work is unquestionably exceedingly difficult. Jobbing houses can if they are so minded to do it sell goods which will ultimately find their way into the forbidden and disturbing channels of distribution. They may conceivably do this deliberately under the inducement of the profit thus secured, or simply refrain from asking too many questions, or permit their customary vigilance to relax, or they might be misled as to the destination and disposal of the goods.

That the catalogue houses are making efforts to secure goods from the merchants is illustrated in the correspondence published in another column showing the manner in which on the quiet they are endeavoring to replenish their stocks through these underground channels. It is said, too, that they make the boast that they are in receipt of various propositions from jobbing houses to supply them, charging only a very small percentage for thus turning over the goods.

The work to which the committee is now giving its attention has to do with methods by which this kind of thing can be prevented. It is keeping the trade informed in regard to the measures which the catalogue houses are adopting and is putting merchants on their guard against the efforts which are being made. This work is referred to as difficult because there is such a multitude of jobbing houses, not all of which, it may be presumed, would take the same view of their duty and interest in the premises, together with the further fact that there are thousands of retail houses which, if need be, might be made the sources of supply, in smaller quantities, indeed, and at higher prices, which would render them much less serviceable. In regard to the jobbing houses, however, another potent consideration would have weight and tend to make them hesitate to lend themselves to the defeat of plans which look so directly to the welfare of the trade and in which the retail merchants are especially and with substantial unanimity interested. In the present temper of the trade any jobber who should make his house a channel for traffic of this character would be incurring a grave peril, inasmuch as if detected and his course laid before the trade it would call down upon him a measure of disapproval which would make all his gains by this underground business look like thirty cents.

Condition of Trade.

With the growth of the year and the passing of the inventory period trade activity is progressing with what is agreed to be the promise of a prosperous year. There have been some moderate advances in price, especially in raw material, which manufacturers of finished products are loath to follow until compelled to do so. The trade convention season is increasingly occupying the attention of both retailers and wholesalers, with profit to both in the exchange of ideas and the broader views necessarily developed at such meetings, many of whose participants are manfully contesting encroachments in their field in a businesslike way instead of relying on legislation for remedies they can apply themselves. A pleasing sign so far this year is in the movement of Mechanics' Tools, which experienced Hardwaremen, both producers and distributers, recall as indicating healthful and promising conditions for obvious reasons. Traveling salesmen report the absence of any considerable amount of surplus stock in dealers' hands, which is also a favoring factor. Some merchants and manufacturers allude to the movement of merchandise during January as less active than was indicated as probable by the orders received in the closing months of 1904, but in many instances it is also a fact that more business has been

done since the beginning of the new year than is usual for the corresponding period, or as was the case a year ago. Some speak of the execution of unfilled orders still on their books January 1, which is keeping them employed, others working overtime to keep up. Some of the allied trades, notwithstanding advances in important materials during the past 12 months, say that January sales this year are 15 per cent. in excess of the same month in 1904. Occasionally collections are mentioned as a little slow, but not to the extent of previous corresponding seasons.

Chicago.

A canvass of the jobbing interests centered in Chicago indicates that the month of January has been a good deal better than the corresponding month of last year, and, in fact, one of the best Januarys in the history of the business. If the buying movement had not been so heavy in November and December January would have been without a doubt a record breaking month. As it is December and January combined will probably exceed in contracts and orders any similar 60-day period in the past. Just now there is an unusually active demand for Poultry Netting and Wire Cloth, influenced no doubt by the feeling that there may be a scarcity of Wire Cloth and that Poultry Netting may be advanced in price. The requirements of the Panama Commission may serve to divert a large amount of Wire Cloth from ordinary trade channels and make it more difficult for existing mills to keep pace with the demand. There is a feeling that an advance in Wire and Nails cannot much longer be deferred. The last advances on Nuts and Bolts have not had any appreciable effect on the market one way or another, as the large buyers are already well covered at old prices. An unusually large trade has been had this winter in Snow Shovels, and particularly in Sidewalk Cleaners. The Skate trade has been only fairly good. The Western Hardware conventions to be held during the next six weeks promise to be unusually interesting, and it is hoped that the attendance will be still larger than in previous years.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Since our last letter to *The Iron Age* we have experienced rather unusual weather for this location—namely, heavy snow storms accompanied by high winds, which have blocked railroad traffic, both passenger and freight. Salesmen on their routes have been held up in towns, and traveling on the railroads has been anywhere from 5 to 27 hours late, the latter being the experience of one traveler. Mails and goods have also necessarily been delayed. The extreme weather has brought on both colds and *la grippe*, nor does the appearance to-day indicate that we have seen the last of it. The natural result has been a rather spasmodic condition of trade.

Doubtless all the readers of *The Iron Age* were interested in the many interesting reports from the various sections of the country in the first issue of this paper for 1905. In nearly all instances they showed an anticipation of a good trade for 1905. It must be interesting to all the trade to know that it is estimated that the various savings banks of the country held in the aggregate over $3,000,000,000 in deposits January 1, 1905, with over 7,000,000 depositors. In addition to this the other banks of the country naturally have many depositors not in trade whose deposits may be considered savings and would greatly swell that total. It is officially announced that the number of buildings erected in 1904 was greater than in any recent year, and it is predicted that 1905 will exceed 1904 in this respect. Some of the earlier building may have been of a speculative character, but during the past year building has been to meet the actual requirements of the country, and this is especially true of dwellings and homes for families, which is an indication of great prosperity. It is stated that never before were so many homes built by those who expected to occupy them and most likely built them out of their savings. In our own city homes have been erected extending into the suburbs apparently beyond the ability of our trolley system to accommodate the travel, and it has been a stupendous question with the trolley lines "how to catch up," to say nothing of how to provide for the future. The subway system seems to be the only solution for the latter.

During the month it has been reported that manufacturers are nearly all busy, and that they look for a good trade.

Throughout the South there is less anxiety in regard to the unusual yield of cotton than there was some weeks ago, and it is now ascertained that more than half the product of between 12,000,000 and 13,000,000 bales had been disposed of before the decline in price, and was in second hands and not in the hands of the producers. There is no present indication, however, that the price of cotton will continue as low as it now is during the year. Collections are fair.

St. Louis

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Since our last report the Northern country has remained covered with snow and ice. The bad weather has naturally reduced the volume of retail business in the Northern States. Notwithstanding the low price of cotton, numbers and sizes of orders from the South are satisfactory. Collections are fair, but would be better if more cotton was moving. A great many planters in the South can afford to hold their cotton, and they are waiting for better prices before they let go.

The steel manufacturers write enthusiastically about the condition of business. The Nail and Wire people report that they are full up on orders. The following goods have advanced since the first of the year: Tin Plate, Tinware, Galvanized Ware, Wringers, Strap and T-Hinges, Bright Butts, Picks, Mattocks and Grub Hoes, Sledges and Hammers. An advance on Axes will be announced in February. No doubt most jobbers are well covered at old prices, and if such advances continue they can look forward to a little extra profit from advances in 1905. It remains to be seen whether the jobbers will take advantage of the situation. It is naturally a great temptation when a jobber has a good stock of goods bought at old prices to divide the advance with his customers.

All this is very nice for the manufacturers and very nice for the jobbers. How about the retail dealer? Is the retail dealer prospering? Is he making more money? Does he find it easier to hold his own? Can he expect under present conditions, by energy and prudence, to lay up a reasonable competence to comfort his latter days?

Our business structure is like a great pyramid: The manufacturer on the top, the jobber next, then the retail dealer and below him, as the base of the pyramid, the great consuming class. The farmers and mechanics have certainly done very well the past few years; so have most of the manufacturers and jobbers. In these times of prosperity how has the retail dealer fared? Is he making much more than a living? Reliable statistics on this subject gathered by representative journals, such as *The Iron Age*, and classified by States would make very interesting reading. A man who in his best years is just making a living can hardly be called a success. What percentage of retail Hardware dealers make a success? In what parts of the country are they the most successful? This is a very interesting subject for speculation.

Would it not be a good idea at the various meetings of the Retail Hardware Dealers' Associations which take place in February to have the dealers present, without giving their names, state how many of them, after allowing themselves a reasonable amount for salary or living expenses, clean up, say, 12 per cent. per annum on their investment?

We maintain that if the retail Hardware dealer is not prosperous the prosperity of the Hardware jobber is not on a substantial basis.

Baltimore.

CARLIN & FULTON.—Trade at present feels the disappointment of our cotton State friends at the low price of their great staple, while the nearer sections are almost isolated by the snow and ice, which have rendered the country roads almost impassable. With regard to the

price of cotton, it is perhaps fortunate that the smaller farmer, who generally was forced to sell his crop early in the season, obtained a good price for a large yield, while the reduction in price affects more largely the wealthier class and those best able to stand a loss or to carry their holdings awaiting an improvement in the market. The purchasing power of the average individual is perhaps greater than ever before, the result of two or three successive years of good crops with good prices, and while at present trade is depressed in that section there is undoubtedly a most excellent basis for better business later in the season.

As is usual at this time of the year, the trade is experiencing the delays in transportation owing to the congested condition of the railroads and the lack of motive power. Whether this is absolutely the result of the causes assigned by the railroads or whether it is due to inefficient management we cannot say, but it seems hardly credible that business is so great that carload shipments which ought not to require over three or four days between points should take as many weeks to reach destination. In our own city we have known cars to be lost in the terminal yard and the whole office force in the trace department searching around for cars which were in the sheds but unknown to the proper authorities. The railroads are very prompt to charge demurrage where a car is not unloaded within a specified time after its arrival, but there is no compensation made for their own delays, frequently reaching weeks beyond a reasonable length of time in transportation. How much of this is due to manipulation and how much to actual business conditions the railroads only know, but there should be a remedy.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—Prices are very firm all along the line, and the most optimistic people we have to deal with are the manufacturers. All of these without a single exception announce full order books, with business enough to run them into the second quarter of the year at least.

The quiet in jobbing and retail trade which as a rule prevails the first of the year has not been entirely overcome. There has been some very cold weather, which hereabouts may well be described in the current phrase of the day as a "corker." In other words, it bottles up the energies of the country people, and the cannon stove in the post office or country store is the center of operations—expectoratorial or otherwise—for the time being.

The Ohio River is a picturesque chapter out of a Polar expedition, being full of ice floes and snug harbored water craft. Just now it is frozen solid from shore to shore. Several of the barges loaded by the Wire Company in Pittsburgh have succeeded in touching our shores after an adventurous passage of five or six weeks. The cargo capacity of these barges almost rivals those of an ocean steamer. For instance, the Nebraska, which is unloading at present, brought somewhat over 1300 tons of Wire and Nails—between 25,000 and 26,000 packages. These if loaded into cars of ordinary capacity, such as distribute from here, would make a train load of say 90 cars. This is only one barge out of three for a single consignee, so the country can readily realize what it would be to have slack water navigation in this great Ohio River the year around. The road bed does not have to be graded and does not wear out. There are no schedules to be maintained. All that is needed is a comparatively tight bottom with somebody to land it when it reaches the desired port.

Cleveland.

THE W. BINGHAM COMPANY.—Trade is good, especially on spring and summer goods, considering the intensely cold weather which has prevailed during the last week, and from traveling salesmen's orders for immediate shipment there is an indication that the stocks of retail merchants are pretty well depleted and that they are now filling up the holes on the shelves in the general line of Hardware. We note with pleasure that there is a growing demand for the medium and high priced grades of Lawn Mowers rather than for the cheaper grades. The stiffening in price of Wire Cloth and Netting has brought orders from many customers who were holding back.

We are also booking orders for an unusually large quantity of Builders' Hardware—*i. e.*, Lock Sets, Fancy Butts and Hinges and Door Knobs, and at the present low prices they are a good purchase.

Orders for Steel Goods, Shovels and Spades are also coming in freely now, as customers, having taken their inventory, know better what they want, and their wants indicate that they anticipate a large demand. These goods are always scarce in their season, and we advise taking them in early, thus being ready for the trade when it comes later.

We see no reason why the present satisfactory conditions should not continue through the spring. The stocks of Cleveland jobbers are well filled up, and with the excellent rail and lake shipping facilities they are in a position to take care of the trade that comes to them in good shape.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Business for the past ten days has been considerably curtailed by the extremely cold and disagreeable weather. Many of the salesmen have been unable to get out into their territories, and when they did get around to their customers found it was hardly worth while, for a great many of them had been stock taking and rounding up last year's business.

The prices of Nails, Wire and other goods of this character are being well maintained by the Hardware jobbers throughout the South, and both jobbers and retailers seem to realize that the present prices are not a bit too high, and are anticipating further advances.

The situation locally is most encouraging. There is more new building in prospect for Nashville during the year 1905 than ever known before. More manufacturing plants have been established here during the past year than for a long time. The bank clearings show a steady and healthy increase each month over the corresponding months of the previous year. The geographical location of this city makes it the natural distributing point for a very wide area of the Southern country, and the city is more and more enjoying the benefits of these advantages.

Collections are not quite as good as they were last month, but are fairly satisfactory.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—The conditions of trade as the season advances are as favorable as expected. The weather has been generally mild, and yet over large sections there is sufficient snow to favor farmers as well as lumbermen. If we get through the winter with the same conditions trade will be about that of the average year and we shall enter on an early spring business with satisfactory prospects.

The firm tendency of prices on most lines is encouraging for business, and the orders from the retail trade will be affected thereby to some extent. It is to be expected, however, that merchants will buy only for wants now and in the early future and there will be a large absence of speculation in purchases.

Upon the whole the situation is quite encouraging and business has considerably more snap to it than was the case last January. There is no doubt that conditions are generally more favorable for business the first half of the year. As to the last half, we shall all know about it when we see what the 1905 harvest is to be.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—There has been no change in the favorable winter weather conditions heretofore reported throughout the Pacific Northwest. Building operations have gone on uninterruptedly and farming conditions could hardly be better. Stock has wintered well on the ranges, so that feed in stack and barn has hardly been broached.

Trade is of normal January volume throughout the country, while here in the city it runs somewhat ahead, owing to work on buildings and grounds in connection

with the Lewis and Clark Exposition and Oriental Fair. With California appropriating $90,000, Washington $75,000 and other Western States proportionately for State exhibits at the Exposition, with Massachusetts and New York $30,000 each, and States like Missouri and Wisconsin the same, an interest is awakened that should surely attract a large attendance that will result in much good to the entire Pacific Coast.

Collections are slow and hard to make, a not unusual condition at this season.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—February is usually one of the quietest months of the year, and there is no reason to expect any material change from former seasons. For present consumption the movement of goods is a trifle light, but advance orders booked for later shipment are of a variety and extent that would indicate a run of business of good proportions later on. The time when spring business will be the leading feature of the condition of trade is approaching, and both jobbers and retailers feel confident that an abundance of business will appear as soon as the winter season shows signs of departure. The country tributary may be reported as continuing in a very prosperous condition, and as long as there is plenty of business in sight, backed by favorable climatic as well as financial conditions, everything points to a large and rushing spring trade.

NOTES ON PRICES.

Change in Wire and Wire Nail Prices.

At the time of going to press we learn that an advance of $1 per ton has been made in Wire and Wire products. The market therefore will be represented by the addition of 5 cents per 100 pounds to the prices as given in the several reports below.

Wire Nails.—New business is light, but a larger demand is expected during this month. Mills are shipping on contracts placed some time since. The severe winter weather has interfered somewhat with prompt deliveries. The market is firm, and contracts are restricted to shipments within 60 days from date of order. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carload lots to jobbers	$1.75
Carload lots to retailers	1.80

New York.—Business is quiet for small lots from store, but a comparison shows that the sales of local jobbers in this branch for the month of January exceeded those for the corresponding month of last year. The market is firm at the following quotations: Single carloads, $1.94½; small lots from store, $2.

Chicago.—The leading producer and, as far as can be ascertained, all independent producers refuse to take contracts or orders for delivery at present prices beyond 60 days from date. Pressure for higher prices is becoming greater, but thus far there is no change from the official figures of last week, as follows: $1.90, base, in car lots to jobbers, and $1.95 to retailers, with 5 cents extra for less than car lots from mill.

Pittsburgh.—New demand for Wire Nails is only fair, the large trade having bought heavily last month and is now specifying on these contracts. A considerable increase in demand is expected in February, as spring trade usually opens up in that month. This, together with the anticipated advance in price of Wire Nails, is expected to lead to a heavy demand in the coming month. The mills are filled up on contracts and shipments have been retarded to considerable extent recently by the heavy snows and cold weather. The leading interest continues to book business at present prices for shipment within 60 days from date of contract. We quote Wire Nails in carloads to jobbers at $1.75 and in less than carloads at $1.80, f.o.b. Pittsburgh, terms, 60 days, or 2 per cent. off for cash in 10 days.

Cut Nails.—At the meeting of the Cut Nail Association, held January 25, existing prices were reaffirmed for the month of February. Current demand is light, but mills are busy filling contract orders. Should prices of Wire Nails be advanced Cut Nails would take a corresponding advance without formal announcement. The market continues firm. Quotations are as follows: Carload lots, $1.75; less than carload lots to jobbers, $1.80, and to retailers, $1.90, f.o.b. Pittsburgh. Iron Cut Nails, for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents advance per keg on Steel Nails.

New York.—Demand is light consequent upon the limited use of Nails at this season. No change in prices resulted from the meeting of the Cut Nail Association held last week. New York quotations are as follows: Carloads on dock, $1.89; less than carloads on dock, $1.94; small lots from store, $2.

Chicago.—As far as can be learned no advance was made in Cut Nails at the last meeting of the association, and it will be difficult for Cut Nail makers in any event to secure higher prices than those ruling for Wire Nails. Present market quotations are as follows: $1.90 for car lots to jobbers, $1.95 in car lots to retailers, with 5 to 10 cents advance for less than car lots from mill, according to character and size of order.

Pittsburgh.—No change in prices was made at the meeting of the Cut Nail Association on January 25. New business is only fair, but the mills are pretty well filled up on contracts, on which buyers are specifying very freely. The market is firm, but no advance in prices is anticipated unless the Wire Nail mills should make an advance. We quote: Carloads, $1.75, base; less than carloads to jobbers, $1.80, base; less than carloads to retailers, $1.90, base, plus carload rate of freight to point of delivery; terms, 60 days, less 2 per cent. off for cash in 10 days. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities are 10 cents a keg higher than above prices.

Barb Wire.—This month is expected to bring a considerable increase of orders, especially from the West. New business is rather light at this time, though not at all discouraging. The market is firm at present prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.90	$2.20
Retailers, carload lots	1.95	2.25
Retailers, less than carload lots	2.05	2.35

Chicago.—There is every prospect that 1905 will be a record breaking year in the sale of Barb Wire, and indeed of Wire Fencing in general. The spring trade is opening up much earlier than usual, and if producers did not limit orders and contracts to 60 days delivery they might book tremendous tonnages at present prices for delivery during the balance of the year. As it is, mills are running at high pressure, and on some lines of Wire Fencing are already quite a little behind in their orders. Barb Wire prices are unchanged, as follows: Car lots to jobbers, Painted Wire, $2.05; Galvanized, $2.35; retailers, car lots, 5 cents higher; less than car lots, $2.20 Painted; $2.50 Galvanized. Staples, Bright, $2; Galvanized, $2.30.

Pittsburgh.—New orders are rather light, most of the tonnage being booked coming from the West. A considerable increase in orders is expected in February, when the trade usually places contracts for spring delivery. No announcement has been made of an advance in prices, but the trade still anticipates that the leading interest will put up prices within a short time. The tone of the market is firm, and it is said official prices are being rigidly observed. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.90	$2.20
Retailers, carload lots	1.95	2.25
Retailers, less than carload lots	2.05	2.35

Smooth Fence Wire.—Demand from Wire Fence manufacturers is large, while specifications on contracts are occupying the energies of the mills. The market is firm in tone and quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....$1.60
Retailers, carloads..... 1.65

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed.....	Base.	$0.05	.10	.15	.25	.35	.45	.55
Galvanized....	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—The unprecedented demand for Poultry Netting and for Woven Fencing of every kind is leading manufacturers of these products who do not make their own Wire to enter with Wire mills extremely large orders for the gauges they require. These orders are as a rule limited to 60 days' delivery and the feeling is general that long before that period elapses prices will be considerably higher than they are to-day. Meanwhile official figures are unchanged, as follows: $1.75 for base sizes of Annealed Wire in car lots to jobbers, $1.80 in car lots to retailers, with 5 cents extra for less than car lots. Galvanized Wire maintains its regular extra of 30 cents over Annealed.

Pittsburgh.—The mills are running mostly on specifications on contracts, but a fair amount of new tonnage is being placed. The trade still looks for an advance in prices, but no announcement of this has yet been made. A considerable increase in tonnage is expected during February, with the opening up of spring trade. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....$1.60
Retailers, carloads..... 1.65

Binder Twine.—Comparatively light sales appear to have been made in Twine, although additional independent manufacturers are offering their product, some at the International Harvester Company's schedule without guarantee, while others are asking, it is stated, ¼ cent advance. In the weak condition of the Sisal fiber market, there would seem no necessity of advancing prices. It is reported that the Harvester Company has withdrawn its price of 9¼ cents for Sisal and Standard Twine in car lots, and that this has had an unsettling influence, as the trade does not know what the next move will be. In absence of definite advices regarding change in price, we repeat quotations, as follows:

	Per lb.
Sisal	9½c.
Standard	9½c.
Standard Manila (550 feet)	10½c.
Manila (600 feet)	11½c.
Pure Manila (650 feet)	12½c.

Five-ton lots, ⅛ cent less; carload lots, ¼ cent less, Chicago delivery, usual terms of payment. Kansas City, Omaha, Council Bluffs and Minneapolis, ¼ cent added. Prices not guaranteed. Allowing for freight, New York prices would be ¼ cent lower than the above.

Rope.—Business has shown little, if any, improvement during the week, a condition not unexpected by manufacturers at this season. Quotations remain unchanged and are as follows: Pure Manila, 11¾ to 12 cents; Pure Sisal, 10 cents; No. 2 quality Sisal, 8 to 8¼ cents per pound.

Window Glass.—A meeting of a number of the outside Glass manufacturers has been held with the view, it is reported, of co-operating with the Manufacturers' and Jobbers' Window Glass Association regarding prices. A Glass company which controls the output of a number of independent factories has sent out a circular, it is understood, announcing an anticipated advance in its prices, but gives customers an opportunity to stock up before the new prices go into effect. New York quotations are as follows: First two brackets, single, 90 and 15 per cent. discount; larger sizes single and all double strength, 90 and 5 per cent. discount; all from jobbers' list of October 1, 1903.

Oils.—*Linseed Oil.*—No change in market conditions has taken place, the demand being confined to small lots. It is understood that crushers have a large amount of Oil on hand, as well as Seed, but that they will not accept a less price than 40 cents for State and Western Raw, and that contracts beyond April 1 delivery will not be booked. Locally the same prices are asked in lots of five barrels or more. City Oil remains unchanged. Quotations are as follows: City Raw, 43 to 44 cents, according to quantity; State and Western, 40 cents per gallon, for large or small quantities.

Spirits Turpentine.—The market has advanced slightly in sympathy with the conditions in the South. Reported scarcity of labor in the Turpentine belt may result in a decrease in the production for the coming season. Demand is light in this as well as in Southern markets at prices ½ cent per gallon higher than last week. New York quotations, according to quantity, are as follows: Oil barrels, 55 to 55½ cents; machine made barrels, 55½ to 56 cents per gallon.

WORK OF THE CATALOGUE HOUSE COMMITTEE.

THE measures to which the catalogue houses are resorting to obtain goods are illustrated in the letter printed below. It is from a prominent catalogue house, and is addressed to a retail Hardware merchant doing business at some distance from Chicago, requesting him to purchase on their behalf some Guns from a Hardware jobber with whom he has dealings. It is accompanied by the following caution on a separate slip of paper: "Don't let this order lie about, and when you accumulate a case ship them. Don't buy all at one time, nor at one place. No particular hurry for the goods. Send them when you can within a month or two."

Letter from a Catalogue House to a Retail Merchant.

DEAR SIR: I hand you herewith an order for some goods, and I would respectfully suggest that you keep this order strictly confidential.

I want you to make 5 per cent. on these goods, and I expect to order more of them from time to time, so there is no telling how much money you can make from this business in a year if you do not spoil it for yourself.

The main thing is not to have us become known in the matter, and I would suggest that you buy these goods in small quantities from your local jobbers at the price which I affix to the order, and when you have accumulated about ten Guns pack them carefully and ship them to us by freight, sending a bill and bill of lading on the day of shipment, so that we will know from whom the goods are received, for we are receiving thousands of cases and packages daily. It might be a good plan to put your card inside of the case or put a number on the outside of the case and have the same number appear on your bill to us.

I would suggest that you take one or two of these styles of Guns and put them in your show window to make it appear that you are selling this line of goods, and this will make it appear also to the wholesale house or houses in your city that you are selling them over the counter.

You will have to work cautiously on this business so as not to arouse suspicion, and by all means do not attempt to buy many of these goods at any one time from any one house until you have established yourself in the eye of the local wholesale dealer as a fair consumer of these goods.

If there is anything further that I may be able to suggest to you so that you handle this thing properly I will be only too glad to do so, and it may be a good plan to have you drop me a line occasionally and let me know how you are getting on with the scheme. Very truly yours,

P. S.—In case you cannot furnish these goods I will thank you to be kind enough to consider this communication confidential.

DUNHAM, CARRIGAN & HAYDEN COMPANY'S ANNUAL DINNER.

THE annual dinner tendered by the Dunham, Carrigan & Hayden Company, San Francisco, Cal., to its salesmen was held on December 29 at the Cosmos Club. The occasion was, perhaps, the most successful of all the company's annual gatherings. Brace Hayden presided, while Andrew Carrigan acted as toastmaster. Responses were made to such toasts as "Our Travelers," "Our Buyers," "Our Newcomers," "Our Office," "Our Order Department," "Absent Friends," &c. The souvenir *menu* was a very clever and exceptionally interesting one. It was entitled "A Few Fables and an Occasional Truth, None of Which, of Course, Apply to Us." The fables were accompanied by attractive sketches and were characterized by much wit and wisdom.

REFRIGERATORS.

THE BALDWIN REFRIGERATOR COMPANY, Burlington, Vt., calls attention to the fact that its Burlington line is now built of oak instead of ash, with plain raised panels. It is nickel trimmed and is lined with Nicolene instead of being zinc lined, as formerly. The company has added to its already extensive line 11 sizes of solid oak Refrigerators, lined with 7-16-inch white opal glass. Quite a number of minor changes in the way of slight modifications in designs, new finishes, &c., have also been made in the 1905 line.

MAINE MFG. COMPANY, Nashua, N. H., in its new catalogue emphasizes the value in ice saving of stone construction, which has been adopted as a lining in its Stone White Refrigerators. This is an enameled stone lining ⅜ to ½ inch thick. The enamel is baked on the stone in a manner to make the surface a part of the stone. For the lining economy, indestructibility, fine appearance and cleanliness are claimed. In Stone White Refrigerators the joints in the linings are mortised, and the mortises themselves cemented and enameled to make perfect joints. These Refrigerators are made in 10 sizes, including those with double and single doors to provision chambers and lids or doors to ice compartments.

THE WISCONSIN REFRIGERATOR COMPANY, Eau Claire, Wis., has just issued its annual catalogue of Wisconsin Peerless Sanitary Refrigerators. The provision chamber is so arranged that the warm air arising from its contents ascends to the top of the ice compartment through flues in the walls of the latter, thence downward, over, around and under the ice and back to the provision chamber through the galvanized steel beam rack. The walls of the Refrigerator are described as consisting of seven partitions, mineral wool being used for the principal insulator, while air insulation is also provided. The galvanized steel walls of the ice compartment really comprise a flue within a flue, the mechanism being plainly illustrated in the catalogue. The drain pipe contains a drip cup, which also acts as a water seal.

THE GURNEY REFRIGERATOR COMPANY, Fond du Lac, Wis., issues three catalogues for 1905—namely, No. 14, illustrating the Gurney Refrigerators; No. 10, the La Belle Refrigerators, and No. 8, the Cold Wave Refrigerators. The Gurney construction, with its removable galvanized ice compartment, is such that the warmer air from the provision compartments strikes the outside of the ice compartment, which is practically as cold as the ice itself, and is deflected downward to the food chamber, returning again and again. Perforations in the ice compartment also facilitate rapid circulation of cold air, this circulation not only securing a low degree of temperature for the provision compartment, but tending to keep the whole interior of the Refrigerator sweet and clean. The claim is made that these Refrigerators are free from condensation on their inner walls, the whole interior being dry at all times.

THE MICHIGAN BARREL COMPANY, Grand Rapids, Mich., in its handsome 1905 Refrigerator catalogue, in addition to the long regular line of Yukon and Chilkoot Refrigerators, introduces a new line—namely, a series of porcelain steel Refrigerators—in which the provision chambers are lined with porcelain on 18-gauge steel, the porcelain being put on the steel by means of compressed air and baked at a high degree of heat, which insures a smooth, even surface, pure white in color. The joints are tightly fitted and cemented. Provision shelves are regularly made of heavy tinned wire, but porcelain shelves are furnished special. The main case of these Refrigerators is of oak in furniture finish. The Hardware includes Lever Locks and Heavy Bronze Hinges, nickel plated. These Refrigerators have eight distinct walls, and granite rock wool is used as an insulator. Seven styles and sizes are offered. The company also presents its China Stone Refrigerator, in which the provision chamber is made of solid porcelain earthenware 1 inch thick, molded in one piece without a joint.

THE annual catalogue of Hurd Cold Storage Refrigerators makes the announcement that the business of the Hurd Refrigerator Company, Duluth, Minn., has been taken over by a new concern known as the Cold Storage Refrigerator Company, which will conduct the business hereafter at Eau Claire, Wis., where it has a large modern plant with improved machinery and every facility for the production of Refrigerators. The new location is looked upon as avoiding many disadvantages that attended the location of the plant at Duluth, as Eau Claire is much nearer to the center of the Western markets than the former city. The plant is located on three trunk line roads, which offer unusual shipping facilities. William J. Starr is president of the new company and O. G. Brice is secretary and treasurer. The catalogue illustrates a large number of styles of Cold Storage Refrigerators, Grocers' Refrigerators, Ice Chests, Oyster and Fish Chests, and a line of medium cost Refrigerators known as the Reliable. Particular attention is called to the new style of provision chamber floor, which is described as being found only in this line and protected by patents. The back and bottom of the provision chamber are made from one solid sheet of galvanized steel extending from the bottom of the ice chamber to the floor, folded at a right angle then across the entire floor, with a double right angle fold passing over the face in front case and into a groove. The Cold Storage Refrigerators have a patent glass trap in the drain pipe, in which a water seal is constantly in action to prevent the warm outside air from rising through the drain pipe into the ice chamber. This trap is removable for cleaning.

DECISION IN FAVOR OF KEYSTONE LANTERN COMPANY.

THE suit of James H. Raymond, trustee, against the Keystone Lantern Company, Philadelphia, and John T. Casey for infringement of letters patent No. 476,506, for "an improvement in wick raiser attachments for Lanterns," before Circuit Judges Acheson, Dallas and Gray, has been dismissed on the ground of noninfringement. In rendering this decision the court in a somewhat lengthy statement concludes in part as follows:

> An attentive examination of the proofs has brought us to the conclusion that the differences which distinguish the wick adjusting device of the defendants from the wick adjusting device of the Wright patent are not colorable but substantial, and that the defendant's construction is not an invasion of Wright's patented improvement. By reason of the defendants' circular gear face being in continuous engagement with the teeth of the pinion their wick adjusting mechanism is always under the control of the operator, which is not the case in the device of the patent in suit. Again, while in Wright's structure upon the removal of the Lantern bottom from the frame the toothed head of the stop arm is disengaged from the toothed button of the wick raiser shaft, the defendants' rack and pinion remain in permanent engagement, so that when after removal the Lantern bottom is replaced their wick raiser mechanism is operative at once without any adjustment of parts.
>
> Upon the whole case we are of the opinion that the Circuit Court was right in holding upon the proofs that the defendants had not infringed the plaintiff's patent, and accordingly the decree of the court dismissing the bill of complaint is affirmed.

UNION MFG. COMPANY.

THE UNION MFG. COMPANY, New Britain, Conn., manufacturer of Chucks and Wood Planes, at its annual meeting January 28 increased its Board of Directors to its full complement of seven by the election of George W. Corbin and A. F. Corbin. The five members of the old board, A. J. Sloper, A. W. Rice, L. C. Clark, L. A. Vibberts and M. L. Bailey, who have made up the directory for the past five years, were re-elected. At the directors' meeting following the annual meeting George W. Corbin was elected president, A. F. Corbin, vice-president and factory manager, and M. L. Bailey, secretary and treasurer and office and general manager of the company's business outside. John W. Carleton, who has been the company's superintendent for many years, still continues in that capacity. It is the intention of the new organization to be more aggressive in the conduct of the business than ever before. The company owns valuable

patents both in the Chuck and Plane departments, and expects to make rapid progress in building up a large business.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS *for catalogues, price-lists, quotations, &c., have been received from the following houses and are referred to the manufacturers:*

FROM R. C. MEEK, Berryville, Ark., who has succeeded Dodson & Walker in the Hardware business.

FROM JOHN HORST, Madison, Neb., successor to Horst Bros. in the general Hardware business.

FROM DODGE-HALEY COMPANY, Boston, Mass., which has recently been incorporated and has succeeded Dodge, Haley & Co. in the Iron, Steel and Heavy Hardware business.

FROM ARTHUR C. LAMSON, Marlboro, Mass., who has succeeded Lamson & Trowbridge in the Hardware, Implement, Paint, Sporting Goods and Seed business.

FROM TEMPLE & TAYLOR, Ness City, Kan., successors to J. M. Temple, Hardware, Stoves, Implements, Sporting Goods, Paints, Harness, &c.

FROM ELLIOTT & PREWETT, Somerset, Ky., who about February 15 will open up as dealers in Hardware, Stoves, Agricultural Implements, Paints, Harness, &c.

FROM THE E. A. BURBANK COMPANY, Berlin, N. H., whose establishment and $40,000 stock were entirely destroyed by fire on the 4th ult. The loss is partly covered by insurance. The company has secured new quarters and has resumed operations, and will value catalogues and price-lists relating to Hardware, House Furnishing Goods, Iron and Steel, Plumbing, Heating, &c.

FROM GREINER & BARTHOLOME, a new Hardware firm at Evansville, Ind., carrying a complete assortment of Hardware for both wholesale and retail trade. Wm. Greiner has been connected with Boetticher, Kellogg & Co. of Evansville for the past 16 years and Joseph Bartholome was identified with the Mechanics' Planing Mill Company, also of Evansville, for several years.

FROM THE HAWKEYE PUMP COMPANY, Washington, Iowa, which desires quotations on 3, 3½ and 4 inch unfinished oak pump buckets, Nos. 3, 3½ and 4 pump handles, and on 6, 7, 9, 11, 13 and 15 foot wood pump rods to be used in the construction of its Hawkeye Galvanized Steel Pumps.

FROM GEORGE L. ROBERTS COMPANY, Sayre, Pa., which has been organized with a capital of $30,000, succeeding George L. Roberts in Shelf and Heavy Hardware, Stoves and Tinware, Plumbing, Furnaces, Heating, &c.

FROM H. E. LUTHER HARDWARE COMPANY, Centreville, Iowa, which has succeeded Vickery Hardware Company in Hardware, Stoves, Implements, Paints, Sporting Goods, Buggies, Wagons, Harness, &c.

FROM PEARCE HARDWARE & FURNITURE COMPANY, Lake Linden, Mich., successor to Joseph Pearce in the Shelf and Heavy Hardware, Stove, Implement, Paint, Sporting Goods and Furniture business.

FROM MASON & HOVEN, De Queen, Ark., who have lately commenced business as dealers in Shelf Hardware, Stoves, Implements, Sporting Goods, &c.

FROM WHITSON & BARNES HARDWARE COMPANY, Cookeville, Tenn., wholesale and retail Hardware, Implements, Paints, Wagons and Buggies, Saddlery and Harness, Seeds, &c. The company's business will be conducted in two separate stores, the wholesale establishment now being in course of construction.

FROM BRUBAKER-CAMPBELL HARDWARE COMPANY, Salt Lake City, Utah, whose capital stock has recently been increased from $25,000 to $50,000. The company handles Shelf and Heavy Hardware, Stoves and Tinware, Furnaces, &c., and will shortly add Paints and Oils.

FROM NORTH MICHIGAN SUPPLY COMPANY, Eagle Block, Traverse City, Mich., which is soon to commence business as dealer in Shelf and Heavy Hardware, Plumbing Supplies, Contractors' Supplies, &c. The company has been incorporated with a capital of $25,000, nearly all of which has been subscribed.

TRADE ITEMS.

THE FAIRBANKS COMPANY, at Broome and Elm streets, New York, has in course of preparation and about to go to press a fine, large catalogue of Railroad, Mill and Factory Supplies. There will be approximately 1200 large pages; an exact duplicate, much reduced in size, will also be a part of the edition. The matter is being compiled under the supervision of M. C. G. Witte, who has long been identified with the company.

C. W. TAYLOR, manager of the New York branch of the Taylor Brothers Company, 85 Chambers street, New York, manufacturer of all kinds of Thermometers, Barometers, &c., at Rochester, N. Y., is about to take charge of the company's interests in London, at 98 Clerkenwell Road, London, E. C., England. He will leave New York for that purpose about the middle of February. The company has been represented in London about seven years, and about three years ago acquired the interest of Short & Mason, Limited, corner Hatton Garden and Clerkenwell Road, manufacturing large lines of high grade Aneroid Barometers, Compasses and numerous Scientific Instruments of Precision.

THE UNION SELLING COMPANY, 17 State street, New York, under date of January 27, announces that although receivers have been placed in charge of the Standard Rope & Twine Company, it is still prepared to supply certain brands of Rope, Lath Yarn, &c., as the receivers will distribute the product of the mills through that agency. The original consolidation of this business was as the National Cordage Company, organized in 1887, which lasted only a few years, being succeeded by the United States Cordage Company, which was also short lived; being again reorganized late in 1895 as the Standard Rope & Twine Company.

THE determination of the Chemical National Bank, 270 Broadway, New York, to begin this spring the erection of a suitable bank building on the site so long occupied by it, part of which also faces on Chambers street, will compel several well-known Hardware concerns to find new quarters. The bank about three years ago acquired the adjoining property at 80 and 82 Chambers street, now occupied by Landers, Frary & Clark, Kelly Axe Mfg. Company and V. P. Humason, representing the Humason & Beckley Mfg. Company, William Rogers Mfg. Company and Chapin-Stephens Company.

THE CORBIN CABINET LOCK COMPANY, New Britain, Conn., has long since found its accommodations, shared with P. & F. Corbin, at 13-15 Murray street, New York, much too circumscribed in many ways for its growing trade, but available premises were not readily obtainable in the Hardware district. The company, however, has now leased for a long term the entire building at 21 Warren street, of which it will occupy the street floor and two basements as soon as they can be rearranged to meet the new requirements. This move will provide the necessary room for original package goods, open stock and office quarters.

F. D. MITCHELL, secretary-treasurer American Hardware Manufacturers' Association, whose headquarters have been in the Bourse Building, Philadelphia, has recently removed to New York, and now has an office at 309 Broadway, in the Mutual Reserve Building.

Wisconsin Retail Hardware Association.

THE ninth annual convention of the Wisconsin Retail Hardware Association opened this (Wednesday) morning, with 350 members in attendance. The badge of membership this year is a bronze Padlock engraved with the name of the association. The secretary also provided members with tags bearing the inscription "I am," under which was provision for name, firm and address, to be filled in, immediately below which was, "Who are you?" The forenoon was devoted to a meeting of the Executive Committee, in which the routine work of the different sessions of the convention was laid out. This year's attendance is greater than at any previous gathering.

We give below the president's annual address and secretary-treasurer's report, which were presented at the opening session on Wednesday afternoon:

Annual Address of President H. L. McNamara.

The wheel of time has made another revolution, and we are now assembled in our ninth annual meeting. In reviewing the events of the past year I see nothing but cause for congratulation. The conditions of general trade throughout the country have been good and stable and business is on a good and fair foundation. Though our Presidential election occurred during the past year, which always has a tendency to decrease trade on account of the chances of a change in policies, still the trade figures are about equal to those of the previous year and the largest for any Presidential year.

Our association has grown larger, stronger and better. A year ago we numbered 300 members, while to-day we have 400 active, energetic and loyal workers, an increase of 30 per cent.

We have paid all the necessary running expenses and have a very good sum in the treasury. We are fully solvent, and there are no immediate prospects of becoming anything else.

ASSOCIATION FIRE INSURANCE.

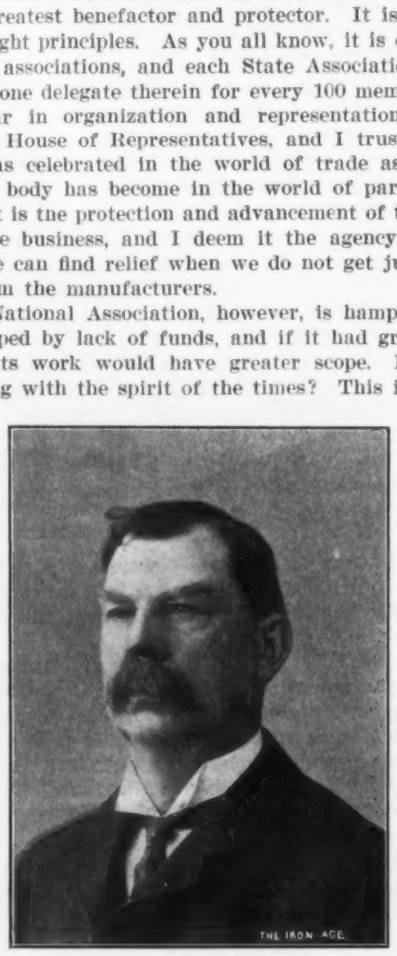
At our annual meeting last year a mutual fire insurance company was formed. Only association members are eligible to membership therein, and we started with about $100,000 of insurance taken. We were put to quite a bit of expense in getting started, such as paying for incorporation, for office furniture and the necessary books, blanks, &c., and it was not until the middle of April that we were organized and doing business. However, the results of these few months have been gratifying. We have paid all the running expenses, the expense of starting and all losses, and to-day have sufficient funds in the treasury to pay a rebate of 20 per cent. to the members. I earnestly recommend this insurance to the members who have not already taken advantage of it. The insurance company is, as might be said, a "child of this association," and I believe should receive and is entitled to receive the careful investigation and consideration of every member of this association before he refuses to become a member thereof. The class of risks is of the best, and the men in charge—practical Hardwaremen—are imbued with sound business principles. You can rest assured that the dividends of this association will play no part in "frenzied finance."

WORK OF THE NATIONAL ASSOCIATION.

By the courtesy of this association it was my great pleasure and honor to be one of your delegates to the national convention of retail Hardware dealers, and I consider that meeting one of the bright spots of the year. I found the officers of that association to be able, energetic, conscientious business men, who have the welfare of the Hardwareman at heart. I became deeply impressed with the good work of the association and of the great power and protection it affords to the individual retail merchant throughout the country.

The work it has already accomplished in suppressing the unfair competition of catalogue houses, in preventing them from buying staple articles of Hardware and selling them below cost merely as an advertisement, is sufficient to commend it to every dealer in the country. I believe its scope and influence will increase and that the time will come when each one of us will look upon it as our greatest benefactor and protector. It is founded on the right principles. As you all know, it is composed of State associations, and each State Association is entitled to one delegate therein for every 100 members. It is similar in organization and representation to our National House of Representatives, and I trust it may become as celebrated in the world of trade as that illustrious body has become in the world of parliaments. Its object is the protection and advancement of the retail Hardware business, and I deem it the agency through which we can find relief when we do not get just treatment from the manufacturers.

The National Association, however, is hampered and handicapped by lack of funds, and if it had greater resources its work would have greater scope. Is it not in keeping with the spirit of the times? This is an age



H. L. McNAMARA.

of combination. On the one hand we find manufacturers combining in trusts for their mutual protection and benefit, and on the other hand we find the laboring men combining in unions for their mutual protection and benefit; and where is the retailer? It is only through such organization that we can expect to maintain our place and standing in the industrial world.

INCREASED MEMBERSHIP.

In my opinion we should increase the dues to the National and thus enable it to continue the good work. I believe in the national organization, and I believe Wisconsin should have a greater representation in that body. At the present time we are entitled to four delegates, and I do not think this is commensurate with the power and standing of the State of Wisconsin. The only remedy is to increase our membership, and I would ask that every one of you deem himself charged with securing at least one new member for our association. If you receive benefits from this association tell your nearest neighbor about it, and induce him to become a member. In this way you will help yourself and the business with which you are engaged.

BROAD FRATERNITY.

To me these annual gatherings are a source of great benefit, and I trust they are to each individual. I hope every member will take a deep interest in this session and that you will feel perfectly free to bring up for discussion the cases which every day confront you in your own business affairs. There may be some here who have successfully solved the very problem on which you are working, and I sincerely hope no member will refrain

from giving to any other member information which may be of value. We should have a broad fraternal spirit and not be guided by petty contentions. Commercial relations are interdependent and the success of one man helps indirectly the success of every one else engaged in that business.

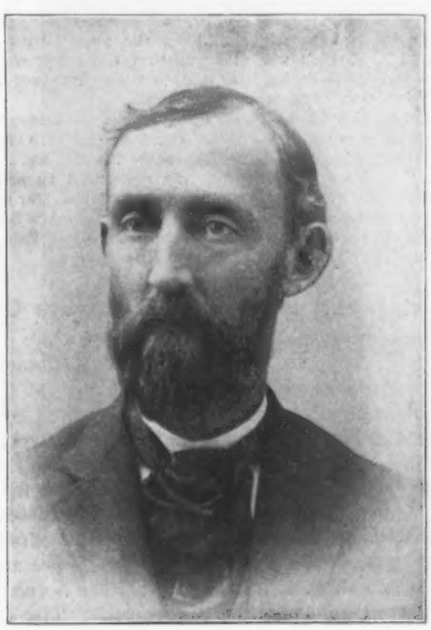
While competition is the life of trade, yet no man should stoop to any low, mean, narrow thing to gain a temporary advantage over his competitor. Especially is this true of the Hardware business. Why, do you realize and do you know that there is more money invested in the Iron and Steel industries, together with their kindred branches, than in any other business in this country excepting alone the banking business?

MUTUAL ADVANCEMENT.

You are engaged in and are representatives of no small business, and the magnitude of this industry demands that each of us manage our business in a manly, dignified way. Let us co-operate for mutual advancement and stand to make our association foremost in attaining the desired ends in the universal brotherhood of man. Let us so shape our policies and our endeavors that a membership in the Wisconsin Association of Retail Hardware Dealers will be a sufficient guarantee in commercial circles, where honesty, integrity and square methods are the criterion.

Secretary C. A. Peck's Report.

With my annual report this year I come with more encouraging words than at any previous meeting. When those of us present to-day look back to the first meeting, held at this same place in 1897, and remember that the



C. A. PECK.

best we could do with the Hardware trade of the State was to get out only about 20 merchants, and to-day look at our register and see the names of 400 who have paid their dues and are in good standing, we may well feel that our work has not been entirely in vain. We might add that many jobbers felt that we would meet for a year or two and our enthusiasm would go where the woodbine twineth, but our growth has always been forward, and we have never recorded a retrograde movement. Some may be inclined to ask, What have you done? But to almost every one of our members the answer is too plain to need mentioning.

TO-DAY THE JOBBERS AND MANUFACTURERS

of the whole United States are ready, and, what is more, they are willing, to co-operate with us in every legitimate effort to benefit the retailer, and the work along this line that has been accomplished the last six months alone is enough to encourage every dealer to persevere. The jobbers, manufacturers and retailers of Hardware are closer together to-day than ever before, and right here I want to urge every retailer to be true on his part to those who are trying to be true the him. When you are advised of one that is not, spot him, and do it so hard that he will feel it. They are few and far between, but don't forget this unasked for advice, it only costs $3 a year.

COMPLAINTS.

My work along the line of complaints has been less the past 12 months than at any other like period since we started. The formation of our own insurance company has given the association a wonderful start ahead, and the end is not yet. There are a few dealers who show skates in their show windows in July that have no use for association work, but they are few and far between, and I wish to go on record here and now in saying that I believe the men in the retail Hardware trade in Wisconsin are as fine a set of fellows as you can find engaged in any other one line of business.

My report on finances will show a handsome increase, and that in face of the fact that our annual dues would have to be increased 50 per cent. to equal the dues of the lowest of other State associations. We go home with $2300 in the treasury.

THE NATIONAL MEETING.

I had the pleasure with your president of attending the annual meeting of the National Association at Indianapolis, a report of which will be presented later, but I might say in passing it was an inspiration to see representatives of some 5000 retailers from 17 different States in session, and every one of them working for the same beneficent object of bettering the condition of the membership. I also attended the annual meeting of the Michigan Association at Grand Rapids in August, and found them alert in combatting the evils which we all have to contend with. They reported progress all along the line, and went to their respective homes with new ambition to push the fight into the enemy's country.

February 24 I sent out 126 statements to delinquents, followed May 7 by 66 more to those still in arrears, which was again followed May 20 by 49 more, and again July 28 to 34 still unheard from, which number was reduced August 17 to 26, when I made drafts on these and I think all paid but 11, whom I had to drop. It was not pleasant work, but I saw no other way to keep some of you fellows who are awfully busy in line. April 7 I mailed 800 copies of the Proceedings of the last annual meeting, which had been furnished us free through the courtesy of *The Iron Age*. The Executive Committee has met but once during the year, August 2, at Green Bay, when it blocked out the programme for this meeting and did other necessary work.

As far as I know we have lost by death during the year but two members—August 2, Robert H. Halsted at Sturgeon Bay, and September 28, Louis Welso at Winneconne.

THE INSURANCE COMPANY.

Of the $350,000 pledged for insurance at our meeting a year ago all but $49,000 has been taken. Part of this was refused for good reasons and a small part of it for reasons not so good.

McKENNA BROTHERS BRASS COMPANY.

THE M'KENNA BROTHERS BRASS COMPANY, Pittsburgh, manufacturer of and manufacturers' agent for Brass and Brass Goods and Firth-Sterling Tool Steels, will open an office and salesroom at 714 Broadway, New York. The company has rented a room at this location and expects to have it open for business within a week or ten days. It is the intention to carry in stock at the New York salesroom, of which E. P. Epstein will act as manager, a full line of Window Display Fixtures, Brass Cuspidors, Railings, Liquor Faucets and, in fact, a complete line of all the company's goods, with the exception of small Saloon Supplies and Working Boards.

NIMMONS & FELLOWS, Chicago, architects for the group of buildings being erected by Sears, Roebuck & Co., will have the placing of an exceptionally large contract for Builders' Hardware for that plant. A large Locker contract will also doubtless be placed.

HARDWARE ORGANIZATIONS.

The following conventions of State Retail Hardware Associations will be held during February and March:

NEBRASKA RETAIL HARDWARE DEALERS' ASSOCIATION:

Fourth annual meeting, February 7 and 8, Omaha. Headquarters, Millard Hotel. Membership, 200. President, J. C. Cornell, Ord; secretary, H. J. Hall, Lincoln.

IOWA RETAIL HARDWARE DEALERS' ASSOCIATION:

Seventh annual meeting, February 8, 9 and 10, Des Moines. Headquarters, Savery Hotel. Sessions at Commercial Exchange Hall. Membership, 350. President, S. R. Miles, Mason City; secretary, A. R. Sale, Mason City.

COLORADO RETAIL HARDWARE DEALERS' ASSOCIATION:

Third annual meeting, February 14 and 15, Denver. Headquarters, The Adams. Membership, 125. President, A. L. Branson, Trinidad; secretary, F. C. Moys, Boulder.

KENTUCKY RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:

Fifth annual meeting, Louisville, February 14 and 15. Headquarters, Galt House. President, J. C. Frederick, Owensboro; secretary, John R. Sower, Frankfort.

ILLINOIS RETAIL HARDWARE DEALERS' ASSOCIATION:

Seventh annual meeting, February 14, 15 and 16, Peoria. No official hotel headquarters. Sessions at Turner Hall. Membership, 300. President, C. H. Williams, Streator; secretary, L. D. Nish, Elgin.

PENNSYLVANIA RETAIL HARDWARE DEALERS' ASSOCIATION:

Fourth annual meeting, February 21 and 22, Harrisburg. Membership, 200; gain since last meeting, 65. President, Joseph M. Selheimer, Lewistown; secretary, J. E. Digby, McKees Rocks.

INDIANA RETAIL HARDWARE DEALERS' ASSOCIATION:

Sixth annual meeting, February 21, 22 and 23, Indianapolis. Headquarters, Denison Hotel. Membership, 425; gain since last meeting, 48. President, E. M. Bush, Evansville; secretary, M. L. Corey, Argos.

MINNESOTA RETAIL HARDWARE ASSOCIATION:

Ninth annual meeting, February 23, 24 and 25, Duluth. Headquarters, Spalding Hotel. Sessions in Lyceum Theatre. Membership, 600. President, A. T. Stebbins, Rochester; secretary, M. S. Mathews, Boston Block, Minneapolis.

MISSOURI RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:

Seventh annual meeting, February 21 and 22, St. Joseph. Headquarters, Commercial Club. Membership, 160. President, Taylor Frier, Louisiana; secretary, Fred. Neudorff, St. Joseph.

OHIO HARDWARE ASSOCIATION:

Eleventh annual meeting, February 28, March 1 and 2, Dayton. Headquarters, Algonquin Hotel. Membership, 325. President, John F. Baker, Dayton; secretary, Frank A. Bare, Mansfield.

CONNECTICUT RETAIL HARDWARE DEALERS' ASSOCIATION:

Second annual meeting, March 7, Hartford. Headquarters, Hotel Hartford. President, W. A. Church, Derby; secretary, James De F. Phelps, Windsor Locks.

NEW YORK STATE ASSOCIATION OF RETAIL HARDWARE DEALERS:

Third annual meeting, March 7, 8 and 9, Buffalo. Headquarters and meeting at Hotel Iroquois. Membership, 175. President, John G. Ferres, Johnstown; secretary, John B. Foley, Syracuse.

NATIONAL RETAIL HARDWARE DEALERS' ASSOCIATION:

Minneapolis, Minn., March 14, 15 and 16.

NEW ENGLAND RETAIL HARDWARE DEALERS' ASSOCIATION:

Twelfth annual meeting, March 15 and 16, Boston. President, John H. Sayward, Haverhill; secretary, F. Alexander Chandler, 36 Federal street, Boston.

The Ohio Hardware Association.

The following letter from Frank A. Bare, secretary, Mansfield, Ohio, gives some of the reasons why the Hardware merchants of the State, members and nonmembers of the association, should attend the coming convention:

Before there can be any advancement in an individual or his business, it is necessary first of all that the individual realize himself in the wrong; and, second, that he place himself in those conditions that contribute most to his improvement.

All Hardwaremen are dissatisfied with some phases of the business as it is now conducted. We realize many things in the wrong. The next logical step is to use every means in our power to correct the unfavorable conditions.

The Ohio Hardware Association may be made one of these means. We are going to make the Question Box one of the prominent features of the association. In response to the secretary's request questions are coming in from all parts of the State, from the smallest dealer to the largest Hardware interests in Ohio. Each has his difficulties. So far as intelligent exchange of ideas can make it possible these problems will be solved in this convention.

Business men have never realized the possibilities of salesmanship. Mr. Sheldon will show us that the thing we have regarded so lightly is in itself a science whose mastery is within the reach of every earnest Hardwareman.

Mr. Norvell has spent much time during the last year in an investigation of catalogue house competition. He is coming to the convention to give us the benefit of his studies.

Colonel Belknap of Kentucky has consented to address us. Colonel Belknap needs no introduction to Ohio Hardwaremen. He brings a message full of interest to us all. We hope every Hardwareman in the State will come to Dayton February 28, March 1 and 2. There is enthusiasm in numbers.

Missouri Retail Stove and Hardware Dealers' Association.

The programme for the meeting of the Missouri Association, which will be held at the Commercial Club, St. Joseph, February 21 and 22, includes papers by H. W. Beegle, Chicago, on "Novel Methods of Advertising"; F. P. Haus, St. Louis, on "Stove Troubles up to Date, and Remedies," and A. F. Sheldon, Chicago, on "Science of Salesmanship." Among the more formal discussions will be "The Missouri Garnishment Law, Its Benefits and Effects"; "Competition, Local, Department Store and Catalogue House, and How to Meet It"; "The 5 and 10 Cent Counter, How to Make It Successful." The Question Box will also doubtless suggest a great many other topics, a consideration of which will be timely and instructive.

New York State Association of Retail Hardware Dealers.

John B. Foley, Syracuse, secretary of the New York State Association of Retail Hardware Dealers, has sent out the following circular letter, which has special reference to the matter of railroad rates for the coming convention:

The third annual meeting of this association will be held in Buffalo, at the Hotel Iroquois, on March 7, 8 and 9.

Full particulars and programme will be mailed you very shortly.

The Committee on Transportation is arranging for special fares if possible, and is desirous of learning, in a general way, how many persons will be in attendance, so that the matter may be presented to the railroad authorities.

I am inclosing a card herewith which I will ask you to fill out and mail at once to the chairman of the committee, who will then advise you promptly (either direct or through this office) what concessions may be obtained. You will readily see that this request is made merely to enable the officers to know approximately how many will be in attendance, and does not bind you in any way to be present.

TRADE WINNING METHODS.

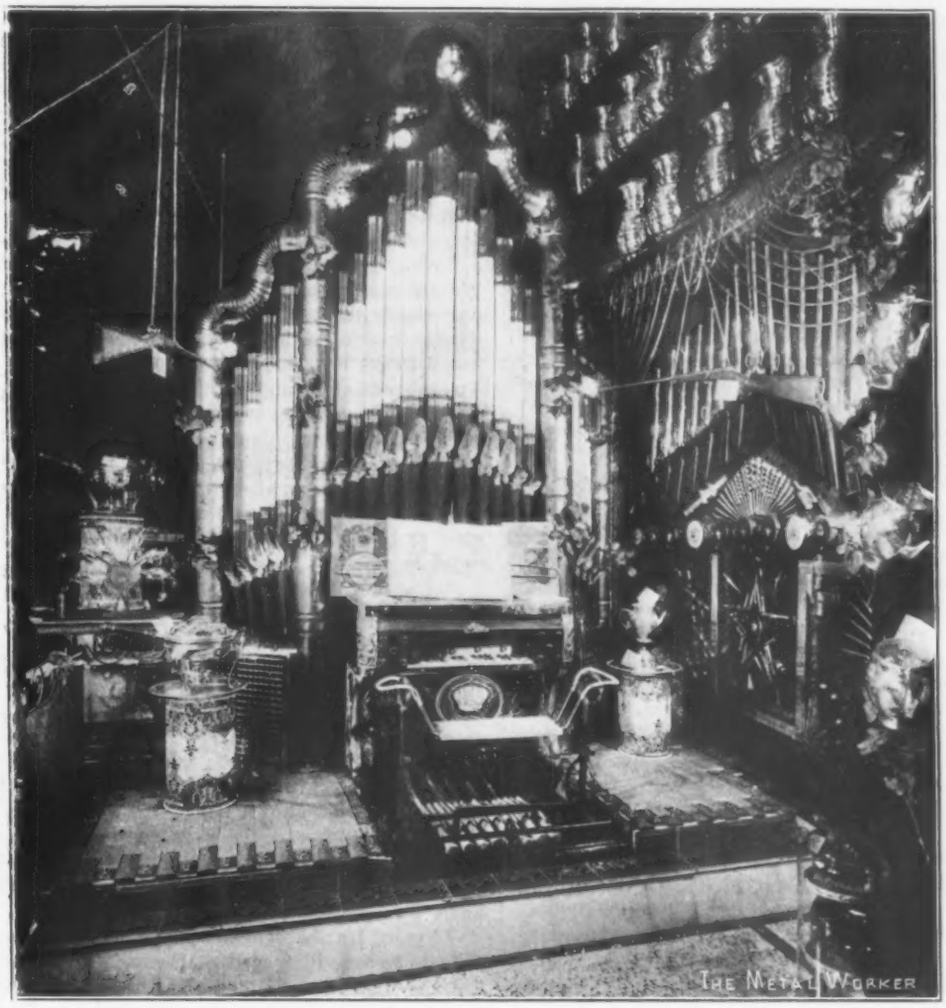
This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

AN EFFECTIVE WINDOW DISPLAY.

AN unusually clever and ingenious display attracted much attention to the show window of Chas. F. Bock & Son, Battle Creek, Mich., during the holidays just past. It was a reproduction in Hardware articles of the compensating pipe organ which is manufactured by a Battle Creek concern. The main pipes of the organ were fashioned from Stove Pipe, highly polished and coming together in graceful reverse curves, showing the handiwork of the expert tinner. The front or body of the organ was formed of the high closet of an Empress Garland Range, the keyboard being made up of White and Brown Oil Stones. The sounding pipes were composed of Galvanized Corrugated Conductors, Side Wall Brass Registers being artistically set upon either side of the organ body. The music rack consisted of a Wire Bread Toaster.

Brass Knobs and Spice Boxes furnished the stops. The mouth pieces on the pipes were Tin Scoops, and the cones were Reducers used on Conductor Pipes. The pedals stretching under the organist's feet were formed of White Axe Helves and Black Handled Hatchets deftly arranged. The organist's perch was a Bathtub Seat, suspended at either end from large Andirons. The approach was of Tiling. Carpenters' Tools, Rifles, &c., constituted the side wall decorations. Across the top red and green incandescent lights threw a mellow glow over the unique effect.

The display was gotten up by Gilbert H. Moore, and attracted more attention from the public than any heretofore made. The articles in the window not directly incorporated in the display were changed every morning, price tickets being used in connection with them, so that the window proved to be a winning ad. for the store.



An Effective Window Display.

MANAGER'S IMPORTANCE.

From a Merchant in the State of Washington: I have always felt that a Hardware establishment reaps what its manager sows, and to be successful he must be among his customers with the proper information out of the store as well as in the store. If he is the right man in the right place he can do more toward selling goods than his best help, for the reason that he does not have to consult or wonder how far he can go and compete, how strongly he can warrant goods, what terms can be given, when goods can be delivered, &c. All this information is at his command as the occasion demands. It is true the manager cannot be in all places at once, but it is best for him occasionally to alternate with his best help, and particularly keep an eye after customers.

MANUFACTURERS' ADVERTISING

From a Hardware House in Pennsylvania: A majority of manufacturers do not render sufficient help to the retail merchant in advertising their wares, and especially on goods which require publicity to effect their sale. The manufacturers who supply the merchant with

lots of good advertising matter in the way of leaflets, circulars, booklets, &c., for distribution to the merchant's customers are the ones who get the business. We have evidence of this in many cases. Some time since we put a certain Washing Machine in stock. We just put it in stock and let it sell itself. But it didn't sell. Nobody looked for it, because nobody knew anything about it. We decided on a different plan. We advertised it in our local papers and asked the manufacturers to furnish us with printed matter, with which we circularized the entire community. Almost immediately a demand for the machine set in, and now it is in constant request and we are selling many more of this particular make than of others perhaps just as good but not known to people in our territory. Manufacturers can do a good deal for the retailer in this direction, and incidentally for themselves.

UNREASONABLE PROFITS.

THE following letter is from an energetic merchant in New England who some months since got out a catalogue which proved to be a trade winner. It will be observed that he sounds an alarm on the danger of large profits, especially in view of the aggressiveness of the catalogue houses:

I firmly believe that big profits are a thing of the past. In getting out my catalogue I didn't consult any other catalogue or any other repository of prices. I try to buy as low as I can, and in selling use my own judgment as to what an article should bring. Nothing in my catalogue is priced at cost. I mean to get a profit on everything that I put out.

I believe that expense is an awful item in business. I am not located on the main street, but I figure that I am in the center a little off from the main street. I find that when business is good on the main thoroughfare of our town it's good on my street. If I have a good Saturday's trade the people on the main street have the same, and if I don't they don't.

Now as to prices: I buy a dozen Dog Collars for $8, and sell them for $1 each, or $12 per dozen. I had a man come in the store who formerly lived in Springfield, Mass., and he told me that there they asked $2.50 for the same Collar. A brother of mine went up to Springfield last week, and he and his better half were doing the stores and happened to see a Hammock. My brother remarked it was just the same pattern and same every way as I carried in stock. He thought he would ask the price. They cost me $4, I sell them for $5.50. In Springfield, Mass., they ask $7.50!

It's nice to get big prices. The public may pay the price once, but when some catalogue house gives them a better price you cannot blame them for buying goods from catalogue houses.

FIGURING PROFITS.

BY HAMMERNAIL.

"LAST year I did more business than ever before in 12 months' time. Now inventory has been taken and I find I have not made any more money than I did in some former years when I sold only about half the amount of goods. This I cannot understand; there is something wrong."

Thus spoke a Hardwareman the other day, after having completed stock taking.

Only a few months ago this same dealer had been in high spirits about the large amount of business he was doing. A little insight into this enlarged business may interest and might be profitable to other merchants:

"What has been your expense of doing business?" he was asked.

"The total expense last year was somewhat larger, but the percentage of expense was but slightly more than in former years. In 1903 itwas 15 per cent. This past year it was 17½ per cent. The increased expense is explained in a larger rent account, a little more for interest, an increase in wages. Insurance, light and heat, advertising and printing each have cost somewhat more than in 1903; but I've done more business. Now why haven't I made more money?"

"Can you tell on what goods your business has increased?"

"I had not thought of figuring it out that way," he said. "But that's easy. Cutlery has been about the same. That always paid a good profit. More Shelf Hardware has been sold. Now, as I think more about the past year's business, and come right down to it, most of the increased trade has been in builders' contracts and the wholesale end. But builders' business is velvet, and pays a fair profit. Yes, I've sold more Guns and Gun Goods at somewhat close profits, but little expense has been incurred in getting this trade."

"Has not your business increased at some seasons and thus necessitated an enlarged general expense which has perhaps kept on during a later month when the trade subsided again to its normal condition?"

"Yes, that is true, too. At the present time I've two or three extra people who are not earning their wages."

Again he was asked, "Is it possible that during the time when business was especially brisk in the wholesale trade, or when your attention was directly taken up with some of the new lines added, you were neglecting some of the old but profitable goods."

"Well, yes," he replied, "there is something in that. We did such a smashing big business in heavy goods and Gun Goods the past fall and shipped out so much in our wholesale trade that our retail stock was sometimes allowed to get low, and a few times we were out of goods. And we added a number of new lines, some of which I guess don't pay, and we had to put a lot of energy into getting these new things going. In our wholesale trade there were some very low prices we had to meet. Then to get the goods at a price that would bring a profit we were often obliged to buy a large quantity, and the surplus stock in a few cases had to be sold very close in order to move it.

"But one thing I've decided upon for 1905," said the Hardwareman in closing, "is to work not for a big business, but for a bigger profit."

The experience of this Hardwareman is not unlike that of many others. There may be cases where some business might be styled velvet business, but as a general thing if it costs 17 per cent. to do business, and this "velvet" trade is on goods that are sold at any percentage of profit less than the 17 per cent., then these "velvet" goods are sold at a loss!

The reaching out for a trade that compels the constant cutting of prices is an unprofitable business, and the sooner a merchant sees it the more money he will have.

If more Hardwaremen would take the time now carefully to go over their past year's business, figure out which are the unprofitable lines and cut out that part of the business that is done at a loss, the balance sheet for 1906 would be more pleasing.

COLD PUNCHED, SOFT STEEL, TAPPED NUTS.

RUSSELL, BURDSALL & WARD BOLT & NUT COMPANY, Port Chester, N. Y., is making a specialty of Cold Punched, Soft Steel, Tapped Nuts, chamfered, trimmed and reamed, semi-finished or finished and cast hardened, as may be desired, which are claimed to be stronger and less liable to split or strip than those made from iron. They are peculiarly adapted for use on engines, automobiles and machinery of all kinds.

THE KENDALL NAIL & SUPPLY COMPANY, Flatiron Building, New York, has been incorporated under Massachusetts laws, with authorized capital stock of $50,000, to conduct a general supply business as jobbers in specialties, including Coated Wire Nails. The officers are: President, Frank C. Ayres, Boston; treasurer and manager, George E. Enell, New York, and clerk, Louis A. Wyman, Boston.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

TUCKER & DORSEY MFG. COMPANY, Indianapolis, Ind: Catalogue No. 42 devoted to Alarm Tills, Skewer Drawer, Stove Trucks, Saw Bucks, Post Hole Augers, Barrel and Box Trucks, Tool Racks, Clothes Racks, Vegetable and Kraut Cutters, &c.

BUTLER BROTHERS, New York: Catalogue No. 527 giving prices which went into effect January 27, and which are guaranteed until their March catalogue is issued. Goods are sold at wholesale only.

THE ATLAS SHEAR COMPANY, Bridgeport, Conn., export department, 7-9 Warren street, New York: Catalogue No. 16 relating to Cast Shears and Scissors of every description for domestic and export trade.

ELWOOD LAWN MOWER COMPANY, Elwood, Ind.: Folder giving "practical pointers on essential points" of their High Grass, Ball Bearing and Summit Lawn Mowers.

EDWARD S. HOTCHKISS, Bridgeport, Conn.: Illustrated catalogue and price-list relating to Hand, Horse and Toilet Clippers.

STAR SHOVEL & RANGE COMPANY, Vincennes, Ind.: Illustrated catalogues, one devoted to Shovels, Spades, Scoops, &c., and another relating to Steel and Iron Ranges and Cook Stoves.

DAVENPORT ICE CHIPPING MACHINE COMPANY, Davenport, Iowa: Illustrated catalogue of Ice Crushing Machines operated by hand and belt power.

HAMBLIN & RUSSELL MFG. COMPANY, Worcester, Mass.: Illustrated catalogue and price-list relating to an extensive line of Hardware specialties and standard Wire Goods.

AMERICAN-SWISS FILE & TOOL COMPANY, Elizabeth, N. J.: Price-list of fine Files of Swiss patterns and cuts made by American methods, forged, annealed and hardened by gas. These goods are for sale by E. P. Reichhelm & Co., 23 John street, New York.

WAGNER MFG. COMPANY, Cedar Falls, Iowa: Illustrated catalogue of combined Ice Chisel-Chipper, Steak Pounder, Cake Turner, Automatic Door Strip, Building Bracket Hanger, Automatic Steel Barn Door Latch, &c.

STAR BUCKET PUMP COMPANY, St. Louis, Mo.: Water Elevators, Galvanized Chain Pumps, Galvanized Pump Tubing, Rubber Buckets, Pump Iron Platforms, &c.

N. & G. TAYLOR COMPANY, Philadelphia: January number of "The Arrow," which is issued monthly in the interest of the company. The stories by "Rufus the Roofer" and "Sheerluck Holmes" enforce in a quaint and interesting manner the virtues of Taylor Old Style Tin.

J. R. CLANCY, Syracuse, N. Y.: Price-list No. 6 of Sure Grip Rust Proof Hose Clamps, Hose Splicers and Vise Jaws for attaching the Clamps.

SOME of the employees of Sargent & Co., New York, who have organized themselves into a musical organization known as the Gem Minstrels (in honor of the Gem Food Chopper, made by the company), gave a very creditable entertainment and reception Friday evening last at the Germania Club, 120 Schermerhorn street, Brooklyn. There were 34 participants in costume and cork, with the usual accompaniments of a minstrel performance, including an efficient chorus and orchestra. The end men sang solos and duets and cracked innumerable jokes. Part two consisted of an orchestra overture, illustrated songs, recitations and a grand finale by the entire company, after which the main floor was cleared for dancing, in which the minstrels with relatives and friends participated.

HILLEY & MCALEER, manufacturers of Tinware, Fifth street and Girard avenue, Philadelphia, Pa., have dissolved partnership, and the business will hereafter be conducted by Eugene J. McAleer and George Livingston, trading as E. J. McAleer & Co.

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SOUTH DAKOTA RETAIL MERCHANTS' AND HARDWARE DEALERS' ASSOCIATION.

THE eighth annual convention of the South Dakota Retail Merchants' and Hardware Dealers' Association was held at Sioux Falls, S. D., on January 24, 25 and 26. Col. T. H. Brown, president of the Board of Trade, welcomed the association to Sioux Falls. Hon P. F. Wickhem of Alexandria responded on behalf of the members of the association. T. Homer Green of Minneapolis, who was scheduled to make an address on "Credits," was unable to be present, but sent an able paper on this subject, which was read to the association by O. L. Schutz of Minneapolis.

W. J. Andrews, treasurer, reported that during the year he had received the sum of $935.84, which in connection with the sum of $68.56 on hand at the close of the last meeting made $1004.40 which had come into the hands of the treasurer. The sum of $716.55 had been paid out on warrants, which left $287.55 in the treasury at the time of making the report.

Transient Merchant Law.

The report of L. S. Tyler, secretary, among other things referred to the working of the Transient Merchant law, which in practice was found to be incomplete except so far as it related to peddlers. Through it the Steel Range peddler had been driven out of the State. Mr. Tyler advocated the appointing of a committee to take up the matter with the State Legislature for the purpose of amending the law so that it would contain a penalty clause.

Mr. Tyler, in the absence of H. P. Packard of Redfield, who was on the programme for a paper on "Benefits of Mutual Fire Insurance," addressed the convention on this question. He referred to the Merchants' Mutual Insurance Company and urged the members to take more interest in it. He stated that the old line companies were now taking many risks as low as 50 cents on $100 for the purpose of driving the mutuals out of business. The rates were lower now by far than they were ten years ago, and this was due to the advent of the mutual companies.

President Advocates Local Associations.

President Grimm in his annual address went over the history of the past year and told what had been accomplished by the association. He stated that while there was some enthusiasm among the merchants of the State, what was needed was more thorough organization of local bodies. He was confident that with more local associations the State organization would be put on a healthier basis. Hs said that the retailer and the manufacturer were being brought closer together through such organizations as the South Dakota Association and said that the new condition was proving beneficial to both. The manufacturer had seen that it was to his advantage to come to the aid of the retailer.

S. B. Nelson of Luverne, Minn., read a paper on "Credits from the Merchants' Standpoint; How to Manage Them and Successfully Collect." Mr. Nelson said that in giving credit to his customers he rated them just as the manufacturer and wholesaler did the retail merchant. One customer might be entitled to more credit than another, but when he had reached a certain point credit was stopped. He was not at all slow in asking for a settlement of accounts and sent statements every month to all of his customers in debt.

George E. Pingree of Chicago and A. J. Alwin of New Ulm, Minn., addressed the convention on "Courtesies Due the Traveling Man by Retailers." Mr. Alwin said there was not nearly so much talk among the traveling men of to-day regarding discourteous treatment as in the past.

Another speaker on the subject of "Credits" was J. S. Johnson of Sioux City, Iowa. He gave a list of failures for a certain period and showed that over 30 per cent. of them were in cases where the merchant had less than $5000 capital and attempted to do a business far beyond his ability. Failures due to dishonesty were comparatively small. Drink, gambling and sporting inclinations were responsible for a great many failures. He thought that a merchant who was not a good collector himself should be very careful about granting credit.

Union Sales.

C. P. Hanson of Bridgewater read a paper on "Union Sales." He believed that the merchants, especially in the smaller towns, would be more successful if they got together at stated periods and held union sales. He thought it the best way to get rid of surplus stock. The plan he proposed was for the merchants to go through their stocks and pick out the surplus, which should be put together under the direction of some one of their number and sold. If such a sale was well advertised he was confident that it would bring in large numbers of people from the outside. He thought that this was a matter for local associations to take charge of where there were such associations.

C. S. G. Fuller of De Smet spoke in favor of the association placing an organizer in the field at once who should visit every town in the State and urge the merchants to organize. This proposition met with favor.

E. J. Mannix of Sioux Falls thought that the present yearly dues of the members were too small, and urged an increase of the dues to $5 per year.

W. L. Williams of St. Paul, Minn., read a paper on "Trade Papers and Association Work," in which he pointed out the benefits secured by merchants from efficiently conducted trade papers.

The subject of "Catalogue House Competition" was discussed at some length. It was the general view that the proper and most effective way to meet it was by more extensive advertising and not by talking against the catalogue houses.

On the proposed modification of the exemption laws there was a difference of opinion, some holding that an honest man would pay his debts with a high exemption as well as with a low exemption.

Officers for 1905.

The following officers were elected for the ensuing year:

PRESIDENT, A. F. Grimm, Parkston.
VICE-PRESIDENTS: F. I. Pixley, Montrose; C. S. G. Fuller, De Smet; M. Millstad, Millbank; M. Cook, Webster; S. W. Huntington, Aberdeen; E. V. Blaine, Redfield.
SECRETARY, L. S. Tyler, Sioux Falls.
TREASURER, W. J. Andrews, Sioux Falls.
DIRECTORS: J. D. Bartow, Plankinton; David Moore, Howard; T. J. Rowe, Fort Pierre; A. P. McMillan, Conde; P. F. Wickhem, Alexandria; John O'Leary, Flandreau.

The secretary was authorized to select the date for the next annual convention of the association. The matter of selecting the place for holding the convention was left to the Executive Committee.

W. H. BENNETT RESIGNS.

W. H. BENNETT, who for 19 years has been identified with the Reading Hardware Company, 17 years of which he has been manager of the Chicago office of the firm, has resigned to devote his entire attention to the business of the Lawson Mfg. Company, 40 Dearborn street, Chicago, of which he is secretary and treasurer. Mr. Bennett first entered the employ of the Reading Hardware Company January 1, 1886, as a traveling salesman, his territory embracing Nebraska, Minnesota, Iowa, Wisconsin and Northern Illinois, his headquarters at that time being Davenport, Iowa. His success in developing trade in this territory was so great that the firm authorized him to open a Chicago office, which was done July, 1888. Mr. Bennett has been a prominent figure in Hardware circles in the West for nearly 20 years. He is an honorary member of the Illinois Retail Hardware Dealers' Association and an associate member of the Chicago Retail Hardware Dealers' Association. His activity in connection with arranging for special excursion trains to the various points at which national Hardware conventions were held has given him an acquaintance in the trade which is national rather than local, and his genial personality has served to strengthen those acquaintanceships into bonds of friendship. The Lawson Mfg. Company, in which he will be a dominant figure, makes a line of Door Hinges, Window Locks and other Hardware Specialties.

The New Hardware Store of Hammacher, Schlemmer & Co.

FIFTH ARTICLE.

DRILLS AND BITS.

To accommodate the various lengths of Bit Point Drills, in sizes from 5-64 to 13-32 inch, diagonal wood partitions are used in the drawer shown in Fig. 46.

Fig. 46.—Bit Point Drills.

All Numbered Drills are packed one dozen of a size in envelopes and are kept in drawers, as shown in Fig. 47. The arrangement of the numbers and sizes is to enable salesmen to quickly locate any that are called for. For instance, 8, 18, 28, &c., are in drawers on the same level, as are also diameters 9-64, 19-64, 29-64, &c.

Fig. 47.—Numbered Twist Drills.

All of 1-inch and smaller diameter are kept above the ledge, and larger ones below the ledge. Bit Stock, Straight Shank, Taper Shank, Blacksmiths' and Ratchet Drills are all carried in a large variety of sizes.

The arrangement of partitions for large sizes of Twist Drills is shown in Fig. 48.

Fig. 48.—Large Sizes of Twist Drills.

Auger Bits and corresponding sizes of Dowel Bits are kept in the same drawer, one back of the other, as in Fig. 49.

Fig. 49.—Auger and Dowel Bits.

AWL BLADES.

Brad and Scratch Awl Blades, shown in Fig. 50, have diagonal partitions, so as to accommodate the different

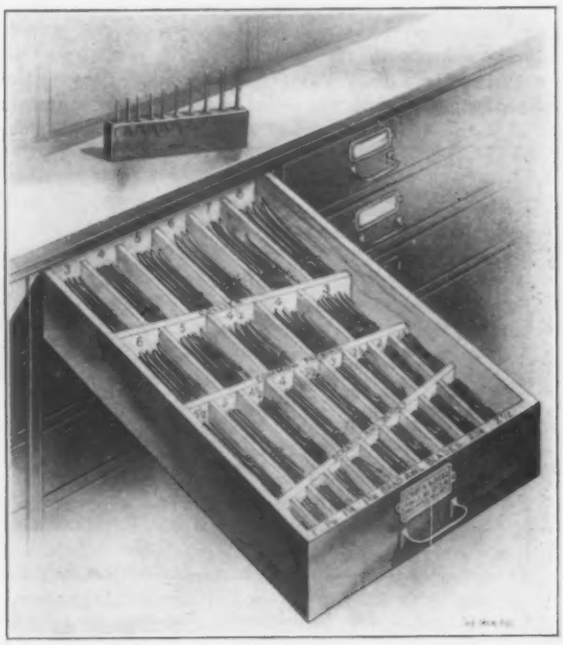


Fig. 50.—Brad and Scratch Awl Blades.

lengths. Brad Awls are carried in lengths from 1 to 2½ inches, and Scratch Awls in lengths from 1½ to 5½

inches. The openings in the drawer are to accommodate the goods in proportion to the quantities sold of the different sizes. The sample block of Awls is shown on the ledge above the drawer.

NEEDLES.

One of the difficult articles to keep in orderly arrangement is Curved Needles, but these are satisfactorily pro-

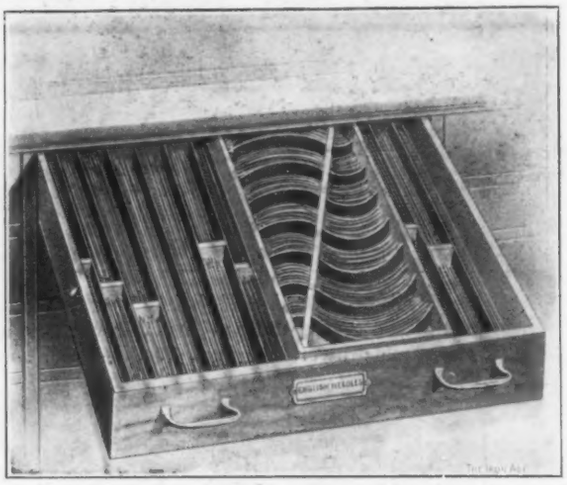


Fig. 51.—Straight and Curved Needles.

vided for, as shown in Fig. 51. On one side of the diagonal partition are Curved Round Point Needles and on the other side Curved Diamond Point. The partitions that separate the different sizes of curved Needles are

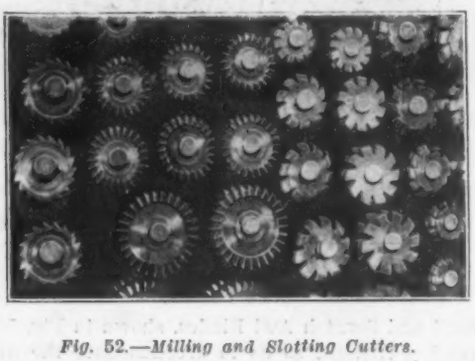


Fig. 52.—Milling and Slotting Cutters.

continuous brass strips bent to shape and extending through kerfs in the diagonal wood partition. Single and Double Round Point and Diamond Point Straight Needles are kept in the other compartments of the draw-

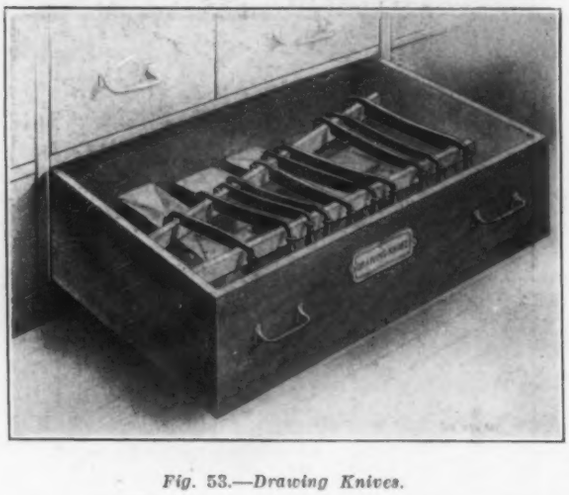


Fig. 53.—Drawing Knives.

er. To prevent the Straight Needles working under the metal partitions false wooden bottoms were put between the partitions after they were in place.

MILLING AND SLOTTING CUTTERS.

An upright case takes the place of drawers on one side of the shelving in the Tool section, Fig. 2. In this case Milling and Slotting Cutters are hung on wooden pegs, as shown in Fig. 52. The pegs are driven in the back of the case. It will be seen that some of the pegs have but one Cutter on them, while others have a number of Cutters. This is not because the stock unintentionally is low on some sizes, but because those sizes are the slowest sellers. Tool stock of all kinds is purchased in volume commensurate with demand.

DRAWING KNIVES.

Drawing Knives of different lengths are hung on cross pieces as in Fig. 53, with reserve stock underneath in original packages. This arrangement eliminates the danger of salesmen being injured when taking them from the drawers, and prevents the cutting edges being damaged by coming in contact with metal portions of other knives. Folding and adjustable Drawing Knives are kept in partitioned drawers.

SQUARES.

The southwest corner of the long counter shown in Fig. 54 has been utilized with reference to economy of

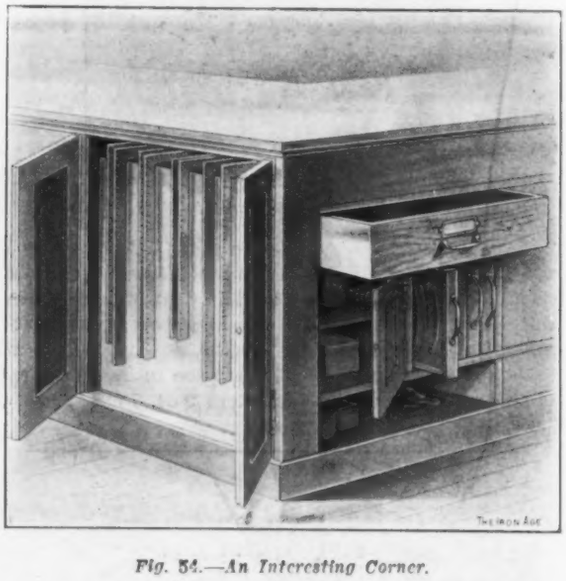


Fig. 54.—An Interesting Corner.

space. Such corners often go to waste in stores, while the things provided for in this instance are usually hard to place satisfactorily. Squares are accommodated on one side, while on the other is a drawer, cupboard, sample boards and an open shelf. The drawer is used for Carvers' Rasps, the cupboard and shelf for cleaning material.

SAMPLES OF FILES, GRAVERS' TOOLS, &C.

Among the sample boards kept in this corner are those shown in Figs. 55 and 56, the former being of the

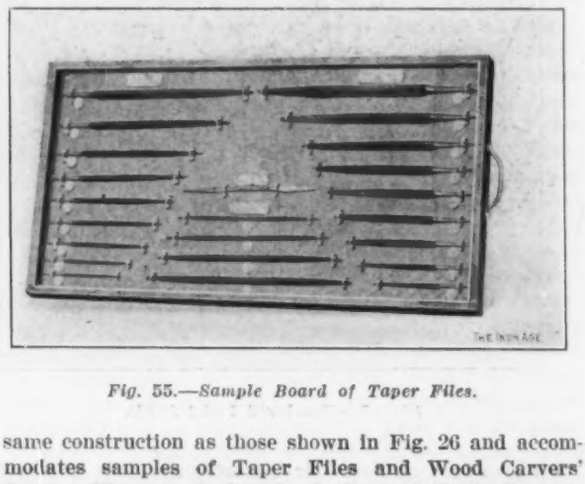


Fig. 55.—Sample Board of Taper Files.

same construction as those shown in Fig. 26 and accommodates samples of Taper Files and Wood Carvers' Rasps. The sample board of Gravers' Tools is more elaborate, hinged so that the cutting edges can be readily seen. The tools are fastened in place by two continuous

strips of brass, with holes drilled between each tool, through which screws are driven, so that they cannot

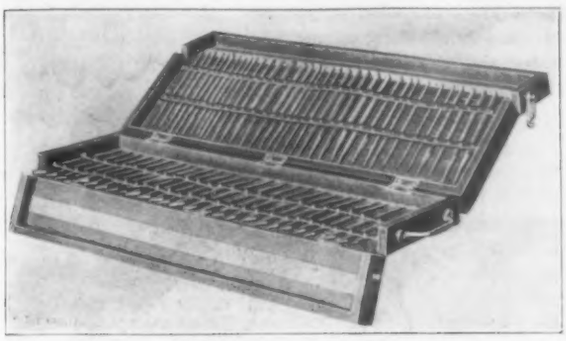


Fig. 56.—Sample Board of Gravers' Tools.

be pulled out by customers making selections. Another set of 25 boards is devoted to sampling Piano Supplies.

(To be continued.)

ATTEMPT TO CHARGE LICENSE FOR CARRYING CARTRIDGES.

FOR some years there has been in the City Council of Chicago an ordinance making it unlawful for wholesale or retail dealers to carry in stock explosives, including Cartridges, without the payment of a license fee of $25 a year, which license was only to be granted after the Fire Department had made an investigation of the premises and had consented to the issuance of the license. As far as Cartridges were concerned, this ordinance was a dead letter from the outset, as no attempt was made to enforce it. Some weeks since, however, a committee appointed by the City Council, which had the question under consideration, recommended the passage of an ordinance in which Cartridges were classified as explosives, to be sold under a license fee, and to be handled and stored only with the permission and under the supervision of the Fire Marshal. This ordinance called for a reduction of the $25 license fee to $10 in cases where less than 25,000 Cartridges were carried in stock at one time, this practically making the license of the retailer $10, as against $25, the license of the wholesaler. A fine ranging from $25 to $200 for each offense was provided to enforce the terms of the ordinance. In cases where large quantities of Cartridges were to be stored, as, for instance, in the large wholesale houses, the ordinance further prescribed that all such material should be stored in fire proof vaults located below the third floor of the building in which they were contained. It was at one time even proposed to require a merchant handling Cartridges to placard the main entrance to his store with a sign in large letters, "Dangerous Explosives," but the committee were persuaded to waive this and some other equally absurd notions. The City Council, however, having investigated the question for themselves, repudiated the proposed ordinance. The matter has again been referred to a committee, which, it is said, will open up the entire controversy again.

About a year ago a public test was made in Chicago in which 75,000 Pasteboard Shot Gun Cartridges, Metal Rifle Cartridges and Revolver Cartridges of various numbers were loaded onto an improvised grate, under which an extremely hot fire was built, and on top of the explosives were also placed large quantities of inflammable materials. At the same time the city officials and fire insurance inspectors had built for their own protection a backstop similar to that used for Rifle ranges. When the fire was started the officials ran to the protection of the backstop, while the representatives of the Ammunition Supplies present calmly stood within 20 feet of the blazing pile. After about 20 minutes of intense heat the Cartridges began popping off, the small Revolver Cartridges making a sound resembling the popping of corn, and the heavy Rifle Cartridges not exceeding the report of a fire cracker in volume, and no missiles or bullets were thrown more than 20 feet from the blaze. Other tests were made including one in which a marksman shot Rifle Bullets one after another into cases of loaded Cartridges, the result being that only those Cartridges which were struck by the Bullet on their primers were exploded, and even then without great violence.

Makers of Cartridges have conducted very thorough tests and investigations to demonstrate the harmlessness of Cartridges in the presence of fire or concussion. Very interesting and thorough tests made by the Winchester Repeating Arms Company of New Haven were referred to in our columns some time since. Records, also compiled by the Winchester Company, of several hundred fires in Hardware and Ammunition stores in which Cartridges were carried failed to develop a single case in which the explosion of Shells wrought damage to life or property.

DEATH OF CHARLES WHITE HUBBARD.

CHARLES WHITE HUBBARD, aged 78 years, for many years an Axe and Saw manufacturer of Pittsburgh, died at the Allegheny General Hospital, in Allegheny, on January 26, from an operation. A peculiar coincidence in the death of Mr. Hubbard was that Charles Lockhart, who was his partner for many years, died a few hours earlier. Mr. Hubbard was a pioneer in the Saw business in the Pittsburgh district, and also a prominent manufacturer of Shovels and other products. He was the first president of the American Axe & Tool Company, serving in that position for several years, and about eight years ago retired from active business life.

Mr. Hubbard was born in Thetford, Vt., and went to Pittsburgh about 45 years ago, becoming connected with Lippincott & Bakewell, manufacturers of Saws and Axes. After about eight years he left the company, and with his brother, S. B. Hubbard, engaged in the manufacture of Saws. The firm was later reorganized, and Mr. Hubbard and his brother became partners of Messrs. Lockhart, Frew, Lippincott & Bakewell. The new firm built a plant for the manufacture of Shovels and Axes at Forty-eighth street and the Allegheny River. A short time after it was put in operation it was destroyed by fire. The firm then bought the Axle factory of Joseph Graft & Co., in Beaver Falls, where the business was carried on for about 20 years. About 15 years ago the firm sold out to the American Axe & Tool Company, and Mr. Hubbard was made president. Mr. Hubbard leaves a widow and three children, John Winslow Hubbard, president of Hubbard & Co., Shovel manufacturers at Pittsburgh; Charles White Hubbard, Jr., of New York, president of the American Axe & Tool Company, and Mrs. Emma Jane Sterrett.

MISCELLANEOUS NOTES.

Barrett Automobile Jack No. .05.

The Duff Mfg. Company, Pittsburgh, Pa., has added to its line of Barrett automobile jacks a No. .05. This jack is single acting—that is, it raises only on the downward movement of the lever. As the body of an automobile extends over the rear axle this feature is an important one. The company's No. .03 jack is the same as the No. .05 in all respects except that it stands 10 inches high instead of 11½ inches. The capacity of either jack is one ton.

Gre-Solvent.

The Utility Company, 231-235 Greenwich street, New York, is manufacturing in connection with a number of motor car specialties a compound named Gre-Solvent. This is a compound for instantly dissolving and removing from the hands machine grease, grime, paint, printers' ink and similar substances. The company guarantees it not to roughen or injure the most sensitive skin, and refers to it as an antiseptic.

The New H. & R. Double Action Revolver, Model 1904.

Harrington & Richardson Arms Company, Worcester, Mass., has put on the market a new double action revolver, 1904 model, with the intention that it shall succeed

the company's American double action, which it has made and supplied to the trade for more than 20 years. The lines of the 1904 model follow the lines of the company's H. & R. automatic revolver, the stock being the same and having the same target medallion in the upper portion. The action is smooth and easy, and the .32 caliber, in addition to handling the cartridges that can be handled in the American double action, will handle the .32 S. & W. long, the cylinder being sufficiently long to permit this.

Improved Hercules Spring Hinge.

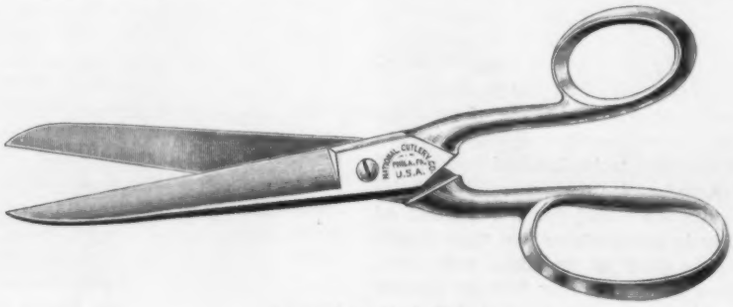
Cleveland Lock Company, Cleveland, Ohio, has improved its all steel Hercules Spring Hinge by the use of a carefully gas tempered spring, while the case instead of having little cuts in the corners is now made solid—all in one piece. On the inside the little clips which hold the end of the spring are drawn up solid from the corner, instead of being cut and bent up. There are in addition several minor corrections and improvements which enhance the working and durability of the hinge.

Lumbermen's and Ice Tools.

A. Sanford Logging Tool Company, Oshkosh, Wis., has recently added a line of lumber carts for handling lumber and logs to its extensive line of Sanford lumbermen's tools. A line of ice tools, including hooks, tongs, chisels, bars, &c., has also been added to the company's products.

A New Solid Steel Shear.

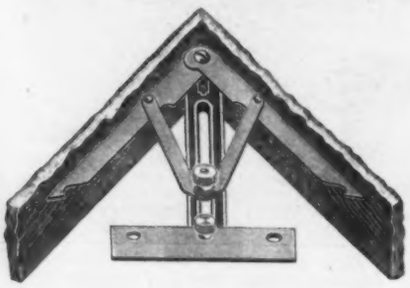
The solid steel shear illustrated herewith is lighter in every part for its length than usual, the increased strength due to the use of steel permitting this feature. The decrease in weight also makes the shear easier for the operator when in more or less continuous use. The shape of the bows has been altered so as to conform better to the lines of the hand and the blades have been made considerably narrower. The shears are made in sizes from 6 to 10 inch, each pair packed in a separate box. The shears are placed on the market by the National Cutlery Company, Philadelphia, Pa., which received the grand prize and medal for these goods at the Louisiana Purchase Exposition.



A New Solid Steel Shear.

Stanley Angle Divider.

The Stanley Rule & Level Company, New Britain, Conn., and 107 Chambers street, New York, is making the Stanley angle divider No. 30, here illustrated. The illustration shows a tool of nickeled iron and steel fitted into a corner formed of two mitered boards. It can be used, as in this case, to find an existing angle or to determine one of any degree needed by the mechanic in laying out work. With it any angle can be found and bisected, and it is particularly useful for fitting molding or other wood work to odd angles with ease, rapidity and accuracy. On one side are graduations for the parts of circles commonly used. The divider is accurately made, having machined surfaces where necessary. It also serves as a try or T square. When used as a square it can be employed as seen in the cut or with wings collapsed for greater convenience, while the lower plate, or square blade, can be used on either side by removing the milled thumb screw and moving blade to right or left as desired. The graduations on reverse side enable one to get instantly any angular figure having from four to ten sides according as the wings are contracted or extended, although with a protractor any sided figure can be determined. The stock, or center slotted piece, is approximately 7 inches long, the wings 6½ inches and the rectangular lower blade 1 x 5 inches in dimensions.



An Application of the Stanley Angle Divider.

Giant Chain Drill No. 317.

The chain drill herewith illustrated has a 4 x 6 inch iron frame equipped with two 5-foot chains. The steel stock has a ½-inch round hole for holding drills with ½-inch shanks. No drill chuck is furnished with this tool, though any chuck with a ½-inch shank can be used in connection with it. The extreme length from the end of the shank to the end of the spindle is 9 inches. The drill has ball bearing thrust, hand feed, with the frame finished in japan and bright steel parts polished. It is put on the market by the Goodell-Pratt Company, Greenfield, Mass., and is much larger and heavier than others made by the company.

Giant Chain Drill No. 317.

Essex Hot Air Engines.

The accompanying cuts relate to hot air engines for running fans, window displays, model machinery, sewing machines and for other light power purposes. The engines are operated by the alternating heating and cooling of the body of air contained in the cylinders. There are

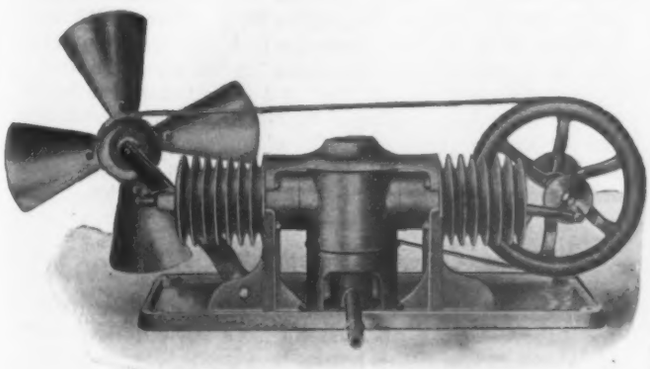


Fig. 1.—Essex Hot Air Engine No. 1, with Fan.

no valves, inlet or exhaust, no water is used and an explosion is impossible. Engine No. 1 occupies a floor space of 7 x 18 inches and develops 1-40 horse-power at a speed of 500 revolutions of the fly wheel per minute, with a gas consumption of 3 cubic feet per hour. Alcohol may be used with this engine instead of gas if desired. The No. 2 engine occupies a floor space of about 9½ x 18 inches, develops twice the horse-power and uses twice the

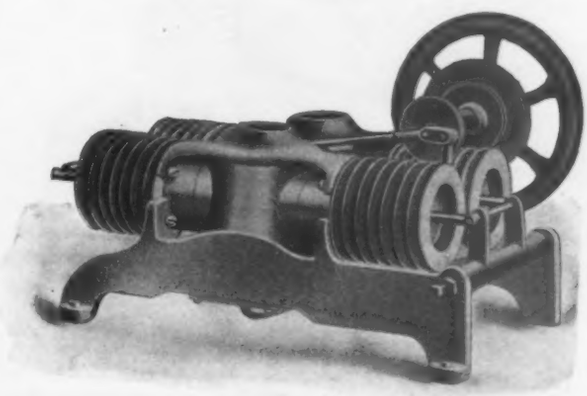


Fig. 2.—Essex Hot Air Engine No. 2.

quantity of gas that the No. 1 does, and runs at the same speed. The No. 2 engine is fitted for the use of gas only. The engines are especially well adapted for operating window displays and will run the revolving table shown in Fig. 3, on which goods may be exhibited; or special adver-

Fig. 3.—Revolving Table for Window Displays.

tising devices may be kept in operation by the engine. When the engines are once started they will run continuously with no attention beyond an occasional oiling until the flame is extinguished. The speed reducing gear, Fig. 4, is a device by which a high speed engine or motor may be converted into a slow, powerful motion. The round plate may be removed if desired and direct connection made to a shaft by means of a coupling. The maker

Fig. 4.—Speed Reducing Gear.

expects to have a number of specialties suitable for the engines to run about March 1. W. H. Smith Mfg. Company, 6-8 Lock street, Buffalo, N. Y., is offering these articles.

Sterling All Steel Carpet Sweepers.

The Streator Metal Stamping Company, Streator, Ill., manufactures a line of all steel carpet sweepers, one of which is herewith shown. The case of the sweeper is made of cold rolled sheet steel solidly riveted and nickel trimmed, and is described as being stronger and more rigid than is possible with wood. The wheels are pressed from sheet steel, with solid centers, while roller bearings are used. The brushes are so constructed as to do away with axles passing through the case. The wheels are carried on short studs, which are riveted into a flat plate, the plate being riveted to the inside end of the case and connected with a steel wire spring which gives elasticity to the frame action and also serves as a closing spring lock to the dust pans. The dust pans, which are rectangular in form, made of heavy tin, are dumped independently of each other. The handle, instead of being threaded to

Sterling All Steel Carpet Sweeper.

screw into a metal socket, has inserted in it a long steel screw which is threaded in the top of the steel bale. At the ends of the rollers the company places what it calls its anti-raveler. This consists of a cup turned from sheet steel which entirely covers the end of the brush roll and bearing. The cap snaps into place between the ends and the end band and it locks securely into the brush opening at end of case, allowing the easy removal of the brush if desired, yet presenting a bearing that is practically proof against the admission of ravelings, threads and the like. The sweeper is provided with an anti-tipping device and is furnished with a protected band of heavy woven braid. The use of steel in place of wood is spoken of by the manufacturer as insuring greater durability as well as effecting a considerable reduction in total weight. It also permits the use of a case ½ inch shorter and 1 inch narrower than wooden sweepers for the same size of brush, enabling the operator to get closer in corners. The sweeper is made in four models. The present output is stated to be 300 sweepers a day and the company informs us that it is perfecting plans for greatly increasing this capacity.

Stanley Adjustable Bit Gauge.

Stanley Rule & Level Company, New Britain, Conn., and 107 Chambers street, New York, has recently added many new high grade mechanics' tools to its line, and included in the number is the Stanley adjustable bit gauge, here shown. Fig. 1 illustrates the gauge, which is of iron,

Fig. 1.—Stanley Adjustable Bit Gauge No. 49.

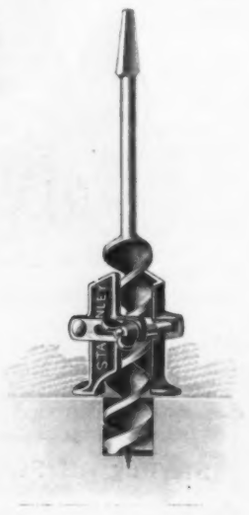
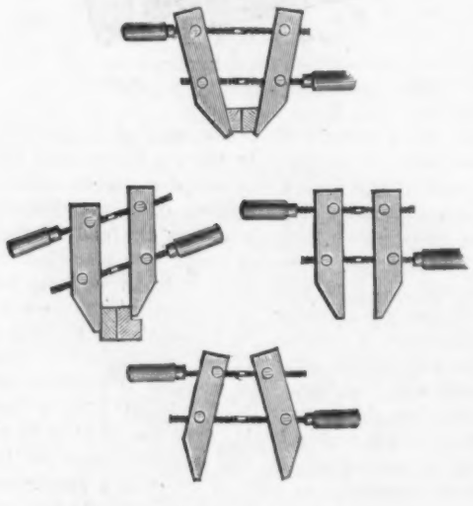


Fig. 2.—Method of Using Gauge.

nickeled, with polished surfaces wherever necessary, especially at the bottom which contacts with the wood being bored. The gauge is 2½ inches from top to bottom, with two 3-16 x 2 polished button head bolts, square under head and operated by means of wing nuts and washers. The gauge is usable on any auger bit up to 1 inch diameter. In use it is only necessary to loosen the thumb screws, insert the shank of bit, turn the twist of the bit in the gauge to the required depth and tighten screws. With this convenient gauge holes of uniform depth can be quickly bored without constantly withdrawing bit for measurement.

The Jorgensen Clamp.

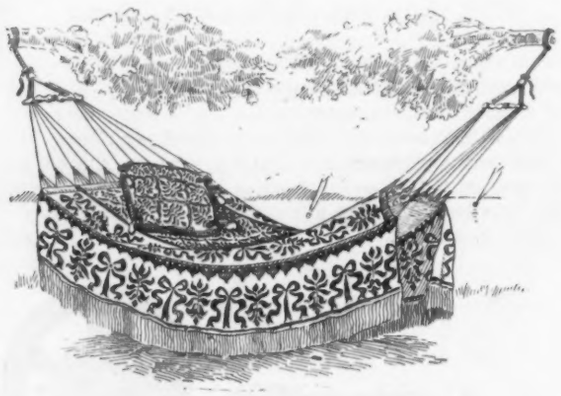
A clamp which has a wide range of adjustability is being placed on the market by the Adjustable Clamp Company, Unity Building, Chicago, Ill. As will be seen by the illustrations, the clamps may be operated either parallel or at suitable angles from each other. This variation is accomplished by the mechanism of the clamp. The screw thread spindles pass through threaded openings in sockets or ends. These ends, made of cold rolled steel, are inserted into the shoes of the clamp loosely, being shouldered to prevent coming out of place. The spindles are also cold rolled steel and are equipped with right and left hand threads, which doubles the speed of operation. The double thread has been provided on the spindle to decrease the power of the clamp and to increase its speed correspondingly, as it was learned in the experimental stages of its development that the single thread gave the clamp power that was destructive. The clamp can be used for holding irregular surfaces without squaring them up, and from the fact that the point of one clamp can be made to extend beyond the other, one point can be used in the offset and the other on the bottom of an irregular piece. In fact, the uses to which the adjustable features of the clamp may be put are almost without number. Durability also is claimed for it as compared with clamps using wooden spindles.



The Jorgenson Clamp.

Hammock with Independent Pillow.

I. E. Palmer, Middletown, Conn., is manufacturing the hammock with independent sofa style pillow, as shown herewith.. The pillows are made of hammock fabric in pattern to match hammock and are upholstered with buttons and tassels. They are also used extensively as sofa pillows and are referred to as being reasonable in cost.



Hammock with Independent Pillow.

The Kohler Wall Scraper.

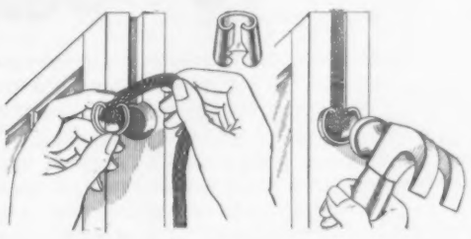
The accompanying cut represents a wall scraper put on the market by F. E. Kohler & Co., Canton, Ohio. The blade is made of the best grade of bright cold rolled steel, with a handle well adapted to the use for which it is designed.

The Kohler Wall Scraper.

G. A., John, Millard and Leonard Helgerson have purchased the business of the Holmes & Howe Hardware Company at Mt. Vernon, S. D., and will in future conduct the business under the firm name of Helgerson Bros.

Kingston's Sash Cord Fastener.

T. H. Kingston, 27 Banks street, West Somerville, Mass., has placed on the market the sash cord fastener illustrated herewith. It is made of elastic sheet steel, rendering it strong and practically indestructible. When



Kingston's Sash Cord Fastener.

a new cord is required the fastener can be instantly removed by a quick pull on the cord. It is of such a nature that its use results in a great saving of time when attaching cord to window sash, and it is equally well adapted where a chain is used instead of a sash cord. The fastener is designed as an insertion device by which the common window cord is conveniently and quickly secured in the sash. A patent for the device is now pending.

Chasse Mouse Traps.

The Chasse Mfg. Company, Middletown, Conn., for whom Frederick Klages, 127 Duane street, New York, is sales agent, has brought out the Chasse mouse traps, made of poplar or basswood, here illustrated. Fig. 1 shows a single-hole trap and the method of setting it.

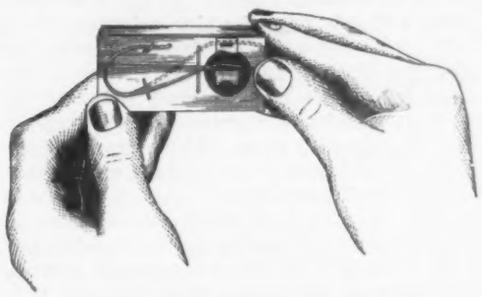


Fig. 1.—Chasse One-Hole Mouse Trap.

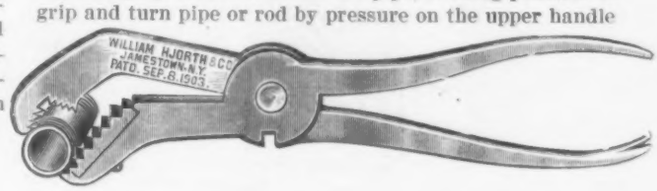
The trap is 3 x 1½ x 1 5-16 inches in size, the bait being dropped into a ¾ x 1⅛ inch hole or well, bored from the top and offset somewhat from the entrance hole. The bait receptacle is covered with a flanged pressed round tin cover, which fits snugly. The setting device is especially convenient and positive in action, it being only necessary to push the coppered spring wire above a brass double pointed staple which loosely holds a zinc trip or trigger ⅝ inch wide, bent at right angles on each end in opposite directions. The animal trying to reach the bait throws the spring off the projecting staple. The metal

Fig. 2.—Three-Hole Trap.

working parts, it will be observed, are such as not to corrode in damp places. Fig. 2 represents a three-hole trap embodying the same principles. This trap is 2⅞ x 2⅞ x 1 5-16 inches in size, with bait well 2 x 1¼ inches, protected by a sliding tin cover. As the trap does not mutilate the victim, it is always ready without washing or scalding. The ease with which the trap can be baited and set is one of its strongest features. The traps are numbered 1 and 3, and listed at 5 and 10 cents each, respectively.

Improved Lightning Combination Wrench and Plier.

William Hjorth & Co., Jamestown, N. Y., for whom Wiebusch & Hilger, 9-15 Murray street, New York, are sole selling agents, have put on the market an improved form of their Lightning combination wrench and plier, here illustrated. The new feature is the high grade tool steel interchangeable jaw, which necessarily receives the greater amount of strain and wear and which at any time can be easily replaced with a new jaw at slight expense, if necessary. The main characteristic of this form of wrench is the geometrical lines of the upper jaw, by which sufficient grip is obtained without exerting enough pressure to crush the pipe, it being possible to grip and turn pipe or rod by pressure on the upper handle

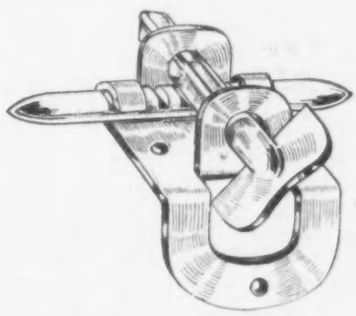


Lightning Combination Wrench and Plier.

alone and without gripping the under handle, on account of this principle. The removable jaw is held in place by a screw entering from the under side. Immediately below the pivot is a wire cutter similar to those on the Button plier, and at the handle ends are a screw driver and nail or tack puller, respectively. The tools are made of drop forged tool steel properly tempered and nicely packed. They are made in four sizes, No. 2000, 6 and 7 inch, nickel plated, to take ⅛ to ⅜ inch pipe, and No. 2001, 9 and 12 inches long, bright, taking ⅛ to ¾ and ⅛ to 1 inch pipe, respectively.

Doren Ventilating Sash Lock.

The accompanying illustration represents a ventilating sash lock offered by the Doren Ventilating Sash Lock Company, 1919 Terry avenue, Seattle, Wash. The lock consists of two bolts, one of which works into the upper sash while the other locks the frame. It is referred to as being simple, strong, easily operated and readily applied. Its construction is such that it does not interfere



Doren Ventilating Sash Lock.

with the cleaning of the glass, as by withdrawing the bolts the windows can be opened and lowered at will. Its use prevents windows being opened from the outside and will allow a 6-inch opening at the bottom and 8 inches at the top, and this with the windows securely locked. It will allow the upper sash to be dropped down even with the lower sash and both securely fastened, so that no child can raise them and fall out, while at the same time ample ventilation is secured. The device is applied to the top of the lower sash close to the frame and by it the upper sash is locked when down, the lower sash being fastened at the same time. It locks both upper and lower

sash, either open or closed, and the lower sash when raised.

Twentieth Century Mail Box.

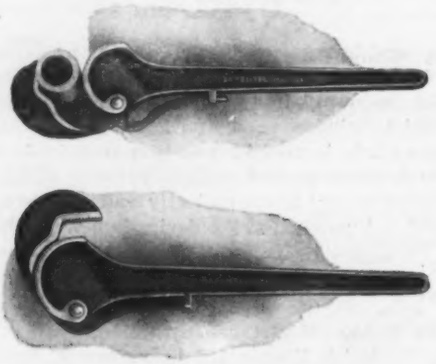
The steel mail box illustrated herewith is intended for use at the entrance of flats and residences in free delivery cities and towns, and is designed for the safe keeping of mail matter delivered by the carrier. It has been submitted to the postal authorities and has received their approval. The box is made of 20-gauge galvanized sheet steel, with soldered joints to render it thoroughly water tight. Both the durability and the sightliness are improved by heavy coatings of aluminum bronze paint on top of the galvanized sheet steel, and the lettering, which is embossed, is painted red, giving the whole box

Twentieth Century Mail Box.

a strong resemblance to the lamp post boxes used by our Government in large cities. Each box is provided with a Yale lock and two keys. When the key is turned the whole front face of the box falls downward and outward 90 degrees, forming a horizontal shelf level with the floor of the box after it is opened. The slot at the top of the box in which the carrier inserts the letters is covered by a 20-gauge galvanized steel curtain bearing the word "Letters." A spring is inserted at the back of this curtain, which forces it forward into its normal position after the opening pressure is removed. Provision against the possibility of fishing letters out of the box through this opening is made by means of an inclined shelf which lies immediately below the opening. A glass window occupies the center of the door, allowing the owner to see at a glance whether the box contains mail. The glass is so inserted that there is room left in front of it for holding a card bearing the name of the owner of the box. The box is made of extra heavy material, and great care is taken to give it permanence as well as beauty. Its sale is being pushed through retail hardware dealers and it is intended to retail at $1. It is manufactured by Heise & Brauer, 201 South Clinton street, Chicago.

The Levy Pipe Wrench.

The wrench herewith illustrated has many novel features, some of which are not clearly indicated in the cuts. Both jaws of the wrench are deeply serrated, and the upper jaw is automatically held in its closed position by the compression of a spring on a hinged extension rod at the back of the wrench. The principal novelty of the wrench lies in the fact that it can be operated by one hand, both as to its grasp and its release. It is simply hooked over



The Levy Pipe Wrench.

the pipe with sufficient pressure to overcome the force of the spring, and the relation of the upper and the lower jaw is such that it grips the pipe automatically, holding it firmly with every operative stroke and releasing it automatically with the return. When the work is finished, to release the wrench from its grasp it is only necessary to give a quick backward movement. The wrench is made in three sizes to fit a range of pipe from ¼ inch to 2½ inches diameter. Both the main shaft and the outer jaw of the wrench are made of steel castings, the construction being such as to furnish ample strength to meet all stresses that can be exerted by force of hand on the length of lever furnished. The sale of the wrench is in the hands of N. K. Northam, Monadnock Block, Chicago, Ill.

PAINTS, OILS AND COLORS

White Lead, Zinc, &c.—

	℔ lb
Lead, English white, in Oil..	9¼@ 9¼
Lead, American white, in Oil:	
Lots of 500 lb or over..	@ 6½
Lots less than 500 lb..	@ 7
In Barrels..	@ 6
Lead, White, in oil, 25 lb tin pails, add to keg price..	@ ½
Lead, White, in oil, 12½ lb tin pails, add to keg price..	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price ..	@ 1½
Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.	℔ lb
Lead, White, Dry in bbls..	@ 6
Zinc, American, dry..	4¼@ 4¾
Zinc, French:	
Paris, Red Seal, dry..	8½
Paris, Green Seal, dry..	8½
Antwerp, Red Seal, dry..	7½
Antwerp, Green Seal, dry..	8½
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over..	11⅞@12⅝
Lots of less than 1 ton..	12⅛@12⅝
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over..	10⅝@11¼
Lots of less than 1 ton..	10⅞@11⅝

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon..	5 @10
Black, Drop, Amer..	4 @ 6
Black, Drop, Eng..	5 @15
Black, Ivory..	16 @20
Lamp, Com..	4½@ 6
Blue, Celestial..	4 @ 6
Blue, Chinese..	29 @32
Blue, Prussian..	27 @30
Blue, Ultramarine..	4½@15
Brown, Spanish..	½@ 1
Carmine, No. 40..	$3.55@4.00
Green, Chrome, ordinary..	3½@ 6
Green, Chrome, pure..	17 @25
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over..	@ 6½
Lots less than 500 lb..	@ 7
Litharge, bbls., ½ bbls. and kegs:	
Lots 500 lb or over..	@ 6½
Lots less than 500 lb..	@ 7
Ocher, American..	℔ ton $8.50@16.00
Orcher, American Golden..	2½@ 3½
Orcher, French..	1¾@ 2¾
Orcher, Foreign Golden..	3 @ 4
Orange Mineral, English..	8¾@10½
Orange Mineral, French..	10½@11¼
Orange Mineral, German..	7¾@10
Orange Mineral, American..	8 @ 8¼
Red, Indian, English..	4½@ 8½
Red, Indian, American..	3 @ 3¼
Red, Turkey, English..	4 @10
Red, Tuscan, English..	7 @10
Red, Venetian, Amer..	℔ 100 lb $0.50@1.25
Red Venetian, English..	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered..	3 @ 9½
Sienna, Ital., Raw, Powd..	3 @ 6½
Sienna, American, Raw..	1½@ 2
Sienna, American, Burnt and Powdered..	1½@ 2
Talc, French..	℔ ton $20.00@30.00
Talc, American..	℔ ton $13.75@25.00
Terra Alba, French..	℔ 100 lb 90 @1.00
Terra Alba, English..	℔ 100 lb 90 @1.00
Terra Alba, American, ℔ 100 lb., No. 1..	.60 @70
Terra Alba, American, ℔ 100 lb., No. 2..	.45 @50
Umber, Turkey, Brt. & Pow..	2½@ 3½
Umber, Turkey, Raw & Pow..	2½@ 3½
Umber, Burnt, Amer..	1½@ 2
Umber, Raw, Amer..	1½@ 2
Yellow, Chrome..	11 @14
Vermilion, American Lead..	10 @25
Vermilion, Quicksilver, bulk..	@65
Vermilion, Quicksilver, bags..	@66
Vermilion, English, Import..	75 @80
Vermilion, Chinese..	$0.90@1.00

Colors in Oil—

	℔ lb
Black, Lampblack..	12 @14
Blue, Chinese..	36 @46
Blue, Prussian..	32 @36
Blue, Ultramarine..	13 @16
Brown, Vandyke..	11 @14
Green, Chrome..	10 @15
Green, Paris..	@24
Sienna, Raw..	12 @15
Sienna, Burnt..	12 @15
Umber, Raw..	11 @14
Umber, Burnt..	11 @14

Miscellaneous—

Barytes, White, Foreign..	℔ ton $17.50@19.00
Barytes, Amer. floated..	℔ ton 17.00@18.50
Barytes, Crude, No. 1..	℔ ton 10.00@11.00
Chalk, in bulk..	℔ ton 3.00@ 3.25
Chalk, in bbls..	℔ 100 lb @ .35
China Clay, English..	℔ ton 11.00@17.00
Cobalt, Oxide..	℔ 100 lb 2.50@ ....
Whiting, Common..	℔ 100 lb .45@ .48
Whiting, Gilders..	℔ 100 lb .55@ .57
Whiting, Ex. Gilders..	℔ 100 lb .58@ .60

Putty—

	℔ 100 lb
In bladders..	$1.65@1.70
In bulk..	1.05@1.15
In cans, 1 lb to 5 lb..	2.00@2.90
In cans, 12½ to 25 lb..	1.40@1.55

Spirits Turpentine — ℔ gal.

In Oil bbls..	55½@56
In machine bbls..	.56 @56½

Glue—

	℔ lb
Cabinet..	11 @15
Common Bone..	6 @ 8
Extra White..	18 @24
Foot Stock, White..	11 @14
Foot Stock, Brown..	7 @10
German Hide..	12 @18
French..	10 @40
Irish..	13 @16
Low Grade..	8 @11
Medium White..	14 @17

Gum Shellac—

	℔ lb
Bleached Commercial..	36 @37
Bone Dried..	47 @48
Button..	45 @00
Diamond I..	.53 @..
Fine Orange..	13 @45
A. C. Garnet..	36 @40
D. C..	@..
Octagon B..	.50 @..
T. N..	36 @37
V. S. O..	.53 @..

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, City, raw..	43 @44
Linseed, City, boiled..	45 @46
Linseed, State and West'n, raw..	40 @41
Linseed, raw Calcutta seed..	@55
Lard, Prime, Winter..	56 @58
Lard, Extra No. 1..	48 @49
Lard, No. 2..	36 @38
Cotton-seed, Crude, f.o.b. mills..	15½@16
Cotton-seed, Summer Yellow, Prime..	24 @24½
Cotton-seed, Summer Yellow off grades..	25 @26½
Sperm, Crude..	60 @..
Sperm, Natural Spring..	@..
Sperm, Bleached Spring..	@..
Sperm, Natural Winter..	62 @64
Sperm, Bleached Winter..	65 @67
Tallow, Prime..	48 @50
Whale, Crude..	@..
Whale, Natural Winter..	45 @..
Whale, Bleached Winter..	47 @..
Menhaden, Brown, Strained..	27 @28
Menhaden, Light, Strained..	28 @29
Menhaden, Bleached Winter..	30 @32
Menhaden, Ex-Bld, Winter..	32 @33
Menhaden, Southern..	19½@20
Cocoanut, Ceylon..	℔ lb 6¾@ 7
Cocoanut, Cochin..	℔ lb 7⅜@ 7½
Cod, Domestic, Prime..	36 @38
Cod, Newfoundland..	39 @41
Red Elaine..	31 @33
Red Saponified..	℔ lb 4¾@ 5
Olive, Italian, bbls..	53½@57
Neatsfoot, prime..	50 @51
Palm, prime Logos..	℔ lb 5⅝@ 6

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test..	10½@11½
Black, 29 gravity, 15 cold test..	11½@12½
Black, Summer..	10½@11½
Cylinder, light filtered..	18 @19
Cylinder, dark filtered..	16 @17
Paraffine, 903-907 gravity..	12½@13
Paraffine, 903 gravity..	11½@12
Paraffine, 883 gravity..	9½@ 9½
Pariffine, Red..	11½@13

In small lots ½¢ advance.

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ₱ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....₱ lb 7¼@7¾¢
Hay-Budden, Wrought.....9@9¾¢
Horseshoe brand, Wrought.....9@9¾¢
Trenton .....₱ lb 9@9¾¢

Imported—
Peter Wright & Sons.....₱ lb 10½¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Hull Bros. Co.....30&10%
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur....75@75&10%
Boring Mach. Augers..70&10@75%
Car Bits, 12-in. twist..60@60&10%
Jennings' Pattern..60&10&10@70%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Auge. and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits (R. Jennings' list) 50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ₱ doz. $26; No. 2, $18.....50&10%
Ford's, Clark's Pattern.....50&10&60%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz. $9.00@10.00
Ames .....25&10%
New Patent.....25&10%
Universal 20%
Wood's Universal.....35%

Ship Augers and Bits—
Ford's 40%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts— See *Hafts, Awl.*

Awls—
Lead Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.86@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights. (up to 3½ lb.)
First Quality.....$6.50
Second Quality.....$6.00
NOTE.—Heavier Weights add Extras as per regular schedule.

Axle Grease—
See *Grease, Axle*

Axles— *Iron or Steel*
Concord, Loose Collar...4¼@4¾¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose...3¼@3¾¢
No. 1½ Com., New Style3¾@4¼¢
No. 2 Solid Collar.....4@4½¢
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18.....75&10@75&10&5%
Nos. 19 to 22.....75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb..4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb. 8½@9¢

Bait— Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....60@60&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 2¾@3¼¢

Towel
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

Beams, Scale—
Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ₱ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..₱ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....₱ gro. $7.80
No. 2 Buffalo.....₱ gro. $9.00
No. 3 Perfection Dust.....₱ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned....₱ doz. $1.20
Holt, No. 1, Tinned.....₱ doz. $1.50
Holt, No. B, Japanned....₱ doz. $2.00
Holt, No. 2, Tinned.....₱ doz. $2.25
Lyon, No. 2, Japanned....₱ doz. $1.25
Lyon, No. 3, Japanned....₱ doz. $1.50
Taplin Mfg. Co.: ₱ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd.$17.00
No. 200 Imp'd Dover Tumbler....$8.50
No. 202 Imp'd Dover Tumbler, T'd.$9.50
No. 300 Imp'd Dover Mammoth, ₱ doz. $25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (S. S. & Co.).₱ gro. net, $6.00

Bellows—
Blacksmith, Standard List.. 60&10@70&10%

Blacksmiths'—
Inch..	*3*	*3½*	*4*	*4½*	*5*	*6*
Each.	*$3.25*	*3.50*	*4.00*	*4.50*	*5.00*	*5.75*

Extra Length:

Each.	*$3.75*	*4.25*	*4.75*	*5.25*	*6.00*	*7.00*

Net Prices.

Hand—
Inch...	*6*	*7*	*8*	*9*	*10*
Doz...	*$4.50*	*5.00*	*5.50*	*6.00*	*6.50*

Inch.	*9*	*10*	*11*	*12*	*14*
Doz.	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*

Bells— Cow—
Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished, Brass.. 60&5@60&10&5%
White Metal.....60%
Nickel Plated....50&10@50&10&5%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 2¼¢
Steel Alloy Church and School 50&10&5@60&5%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting— Leather—
Extra Hvy, Short Lap..60@60&5%
Regular Short Lap...65&10@70%
Standard .....70&5@70&10%
Light Standard.....70&10@75%
Cut Leather Lacing.....60&10%
Leather Lacing Sides, per sq. ft. 17½@18¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....65&70%
Extra .....60&5@60&10%
High Grade.....50&5@50&10%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden....70&10@75&5%
Hartz St. Tackle Blocks.....50@50&5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c...30&10@40&10%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓%

Bolts— Carriage, Machine, &c.—
Common Carriage (cut thread): ⅝ x 6 and Smaller....75&2½%
Larger and longer.....70%
Phila. Eagle, $3.00 list May 24, '99 80&10%
Bolt Ends, list Feb. 14, '95..70&5%
Machine, ⅝ x 4 and smaller 75&5%
Machine, larger and longer.. 70&7½%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:

Inch.....	*3*	*3½*	*5*	*6*	*8*
Per doz.	*$0.30*	*.35*	*.45*	*.56*	*.75*

Cast Iron Spring Foot, Jap'd:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.15*	*1.40*	*2.00*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.95*	*1.25*	*1.55*

Cast Iron Shutter, Japanned, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.80*	*.90*	*1.20*

Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck....75@75&10%
Wrt Square.66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Stove and Plow—
Plow .....70&10@70&10&5%
Stove .....82½@82½&5%

Tire—
Common 72½%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....72½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....72½%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....72½%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.80*	*5.60*	*6.40*	*8.00*

Inch	*2¼*	*2½*
Per doz	*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection .....₱ doz. $30.00
Schatz 40%

Braces—
Common Ball, American..$1.25@1.30
Barber's .....50&10&10@60&10
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60&10@65%

Brackets—
Wrought Steel...80&10@80&10&5%
Bradley's Wire Shelf:
Full cases.....80&10&10%
Broken cases.....80&10%
Griffin's Pressed Steel.....80%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.

Quart.....	*12*	*14*
Water, Regular...	*1.40*	*1.70*	*1.90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier.....₱ gro. $36.00

Bull Rings—See *Rings, Bull*

Butts— Brass—
Wrought, list Sept., '90.....30%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70&10&5%
Parliament Butts.....70&10&5%

Wrought Steel—
Table and Back Flaps...75% Net Prices.
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70&10%
Loose Pin, Ball and Steeple Tip 85%
Japanned Ball Tip Butts... 70&10%
Bronzed, Wrt., Nar. and Inside Blind Butts....55&10% Ex. 70&10@70&10&5%

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb.4¢@4½¢
Sharp, 1 prong...per lb., 4½@4¾¢
Gautier, Blunt.....4¢@4¼¢
Gautier, Sharp.....4½@4¾¢
Perkins', Blunt Toe.....℔ lb 3.65¢
Perkins', Sharp Toe.....℔ lb 4.15¢

Can Openers—

See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	129.60 gro., net.

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—

Berdan Primers, $2 per M...20%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball....$1.49
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:

3-16	*¼*	*5-16*	*⅜*	*7-16*	*½*	*9-16*
7.40	*5.10*	*4.15*	*3.45*	*3.30*	*3.20*	*3.15*
⅝	*¾*	*⅞*	*1 to 1¼ inch.*			
3.10	*3.00*	*2.95*	*2.95 per 100 lb.*			

German Coil.....60&10&10@70%

Halters and Ties—

Halter Chains...60&10@60&10&10%
German Pattern Halter Chains, list July 24, '97.....60&10&10%
Cow Ties.....60@60&10%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring.$23.50
6½—6-2, Str'ght, with ring.$24.50
6½—8-2, Str'ght, with ring.$28.00
6½—10-2, Str'ght, with ring.$32.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Trace, Wagon and Fancy Chains.....60&5@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10@60&10&10&5%
Brass.....60&10@60&10&10%
Safety Chain.....75@75&10&5%
Gal. Pump Chain.....lb. 5@5¼%
Covert Mfg. Co.:
Breast.....40&2%
Halter.....40&2%
Heel.....40&2%
Rein.....40&2%
Stallion.....40&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter....45@50&5%
Niagara Coil and Halter....45@50&5%
Niagara Cow Ties.....45&5@50&10&5%
Niagara Wire Dog Chains..45@50&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl. Jointed Chain.....50%

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 35@38¢
Carpenters' Red.....gro. 30@33¢
Carpenters' White.....gro. 25@28¢
See also Crayons.

Checks, Door—

Bardsley's.....45%
Columbia.....50&10%
Eclipse.....60&10%

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—Socket Framing and Firmer

Standard List.....70&10@75&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60%
C. E. Jennings & Co. Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....70%
L. & I. J. White.....30@30&5%

Tanged—

Tanged Firmers....40&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White, Tanged.....25&5%

Cold—lb.

Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary...9@10¢

Chucks—

Beach Pat., each $8.00.....35&5%
Pratt's Positive Drive.....25%
Empire.....25%
Blacksmiths'.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....40%
Drill Chucks, Skinner Pat., 0, 1, 2.40%
Drill Chucks, Skinner Pat., 3, 4, 5, 6, 7, 8.....30%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P. S. & W. Co..50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7⅛ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓@33⅓&10%
L. & I. J. White.....30%

Clippers—

Chicago Flexible Shaft Company:
'98 Chicago Horse.....$8.75 } 15%
1902 Chicago Horse.....10.75 }
20th Century Horse, each, $5.00...20%
Lightning Belt.....$15.00 }
Chicago Belt.....$20.00 } 15%
Stewart's Patent Sheep, $12.75....20%

Finger Nail Clippers—

Smith & Hemenway Co.℔ doz. net $2.00

Clips, Axle—

Eagle, 5-16 and ⅜ in..75@75&10%
Norway, 5-16 and ⅜ in.60&10@70%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list: Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....70&10@75%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—

Metal Stamping Co.....40%

Mane and Tail—

Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.

Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%

Conductor Pipe, Galva.—

L. C. L. to Dealers:

Territory.	*Nested.*	*Not nested.*
A Eastern.....	*75&5%*	*75%*
B, Eastern.....	*75&10%*	*75&5%*
Central.....	*75&5%*	*70&10&5%*
Southern.....	*70&7½%*	*70&2½%*
S. Western.....	*70&5%*	*70%*

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal, each..	2	3	4	6	8
Labrador ..$1.20	$1.50	$1.80	$2.10	$2.70	
Gal.	3	4	6	8	
Iceland, ea..$1.80		$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galv. Lined, ea..$1.65	$2.00	$2.25	$2.90	$3.90	

Gal. 25%
Gavl. Lined, side handles,

Gal.	2	3	4	6	8
Each.	$1.95	$2.15	$2.40	$3.30	$4.15..25%

Coopers' Tools—

See *Tools, Coopers'.*

Cord—Sash—

Braided, Drab.....lb. 35¢
Braided White, Com.lb.,21@22½¢
Cable Laid Italian..... lb., A, 18¢; B, 16¢
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted..11@17¢
Patent Russia.....lb...@14¢
Cable Laid Russia....lb...@15¢
India Hemp, Braided..lb...@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted.lb. 12@13¢
Anniston Cordage Co.: Braided Cotton.
Old Glory, Nos. 7 to 12...℔ lb 28 ¢
Anniston, Nos. 7 to 12...℔ lb 22 ¢
Old Colony, Nos. 7 to 12..℔ lb 22 ¢
Anniston Drab, Nos. 7 to 12.℔ lb 26 ¢
Pearl Braided, cotton, No. 6, ℔ lb, 22½¢; No. 7, 21½¢; Nos. 8 to 12, 21¢
Eddystone Braided, Nos. 7, 8, 9 and 10.....℔ lb 24 ¢
Eddystone Braided Cotton, No. 6..℔ lb 25 ¢
Harmony Cable Laid Italian, Nos. 7 to 10.....℔ lb 23 ¢
Peerless:
Cable Laid Italian.....16 ¢
Cable Laid Russian.....14 ¢
Cable Laid India.....12 ¢
Braided India.....18 ¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton.....℔ lb 40 ¢
Braided, Italian Hamp....℔ lb 40 ¢
Braided, Linen.....℔ lb 55 ¢
Braided, White Cotton or Spot....℔ lb 35 ¢
Massachusetts, White.....℔ lb 28 ¢
Massachusetts, Drab.....℔ lb 32 ¢
Phoenix, White, Nos. 8 to 12, 24¢; No. 7, 21½¢; No. 6, 25½¢.
Silver Lake:
A quality, Drab.....40 ¢
A quality, White.....35 ¢
B quality, Drab.....35 ¢
B quality, White.....30 ¢
Italian Hemp.....40 ¢
Linen.....57½ ¢

Wire, Picture—

List Oct., '00.....85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord, 85&10&5%

Cradles—

Grain.....40&12½%

Crayons—

White Round Crayons, gr. 5½@6¢
Cases, 100 gro., $4.00, at factory.
D. M. Steward Mfg. Co.: (Case lots, 30%)
Jumbo Crayons.....gr. $3.50
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Zelnicker's Lumber:
Red, Blue, Green.....℔ gro. $6.50
Black.....℔ gro. $4.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, Heavy.....℔ doz. $7.00
Fort Madison, Light.....℔ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's.....℔ doz. 30&10@40%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....℔ doz. 33⅓@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....40%
New Triumph No. 605, ℔ doz. $24.00.....30&10@40%
Ruswin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....℔ doz. 30&10@40%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife...℔ doz. $3.00
Combined Slaw Cutter and Corn Grater.....℔ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..℔ gr. $18@$20
Slaw Cutters, 2 Knife..℔ gr. $22@$36

Tobacco—

All Iron, Cheap..doz. $4.25@$5.50
Enterprise.....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18.....40%
Sargent's, ℔ doz., No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

Washer—

Appleton's, ℔ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..per doz. $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers.....℔ doz. $6.25
Iwan's Perfection Post Hole Digger.....℔ doz. $8.25
Iwan's Split Handle Post Hole Diggers.....℔ doz. $7.25
Kohler's Universal.....℔ doz. $15.00
Kohler's Little Giant.....℔ doz. $12.00
Kohler's Hercules.....℔ doz. $10.00
Kohler's Invincible.....℔ doz. $9.00
Kohler's Rival.....℔ doz. $8.00
Kohler's Pioneer.....℔ doz. $7.20
Never-Break Post Hole Diggers, ℔ doz., $24.00.....60%
Samson, ℔ doz. $34.00.....25%

Dividers—See *Compasses.*

Doors, Screen—

Phillips', style E, ⅞ in....℔ doz. $10.50
Phillips', style 077, ⅞ in....℔ doz. $8.00
Phillips', style x-y, ⅞ in....℔ doz. $11.00

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ℔ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers....35
Diamond Wheel Dresser Cutters....35

Drills and Drill Stocks—

Common Blacksmiths' Drill, each.....$1.50@$1.75
Breast, Millers Falls.....15&10
Breast, P. S. & W.....40&5
Goodell Automatic Drills..40&5@40&10
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10
Ratchet, Curtis & Curtis.....25
Ratchet, Parker's.....40
Ratchet, Weston's.....33⅓%
Ratchet, Whitney's, P. S. & W..50
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60&10@60&10&10%
Taper and Straight Shank.....60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@60¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9.....40%
Buck Bros.' Screw Driver Bits.....30
Champion.....50
Edson.....60
Fray's Hol. H'dle Sets, No. 3, $12..50
Gay's Double Action Ratchet.....35
Goodell's Auto..50&10&10@50&10&10&5
Hurwood.....40
Mayhew's Black Handle.....40
Mayhew's Monarch.....40&10
Millers Falls, Nos. 20 and 21...25&10
Millers Falls, Nos. 11, 12, 41, 42..15&10
Never Turn.....60
New England Specialty Co.....50
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10
Nos. 50 and 55.....60&10
Nos. 20 and 40.....70&10
Smith & Hemenway Co.....40&5
H. D. Smith & Co.'s Perfect H'dle.40
Stanley R. & L. Co.'s:
No. 64, Varn. Handles..60@60&10&10
No. 86.....70@70&10&10
Swan's:
Nos. 65 to 68.....50
No. 40.....40&10
Nos. 25, 35 and 45.....20&10&10

Eave Trough, Galvanized—

Territory.	*L. C. L.*
A, Eastern.....	*80¢7½%*
B, Eastern.....	*80¢12½%*
Central.....	*80¢7½%*
Southern.....	*70¢20¢10%*
S, Western.....	*75¢12½%*

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments:
Plate Rd., and Rd., Cor., 2, 3 and 4 in.....75%
Plate Rd., and Rd., Cor., 5 and 6 in.....60%
Perfect Elbows (S., S. & Co.).....40%

Emery, Turkish—

	4 to 6	*5 to 180*	*Flour*
Kegs.....lb.	*5 ¢*	*5½ ¢*	*5¾ ¢*
½ Kegs.....lb.	*5¼ ¢*	*5¾ ¢*	*6 ¢*
¼ Keys.....lb.	*5½¢*	*6 ¢*	*6¼ ¢*
10-lb. cans, 10 in case....	*6½¢*	*7 ¢*	*6 ¢*
10-lb. cans, less than 10.....	*10 ¢*	*10 ¢*	*8 ¢*
Less quantity..	*10 ¢*	*10 ¢*	*8 ¢*

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's.....50&10%
Walling's.....45%

Cord and Weight—

Ives.....40%

Faucets—

Cork Lined.....50@50&10%
Metallic Key, Leather Lined..60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined....50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—

See *Plates, Felloe.*

Files— Domestic—

List revised Nov. 1, 1899.
Best Brands.....70&10@75&5%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103.....$4.00
Special, No. 104.....$4.00
Fusible Links.....$0.25
Expansion Bolts.....50&10%

Grindstone—

Net Prices:

Inch	*15*	*17*	*19*	*21*	*24*
Per doz	*$2.15*	*2.85*	*3.25*	*3.75*	*4.50*

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's.....70%
Stowell's Giant Grindstone Hanger..℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures, Light.....60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—

See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} 10@12½%

Gates, Molasses and Oil—

Stebbins' Pattern.80&10@80&10&5%

Gauges—

Marking, Mortise, &c......50&10&5@50&10&10&5%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....20@20&10&10%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....30&10%

Gimlets— Single Cut—

Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window—

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush..25@50%
Cans (½ pts., pts., qts., ½ gal., gal.).....25@48%
International Glue Co. (Martin's)...40&10%

Grease, Axle—

Common Grade....*gro. $4.50@5.50*
Dixon's Everlasting..10-℔ pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 ℔, $1.20; 2 ℔, $2.00

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00
Pike Mower and Tool Grinder, each.....$6.00
} 33⅓%
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.25

Halters and Ties—

Covert Mfg. Co.:
Web.....45%
Jute Rope.....50&5%
Sisal Rope.....35&5%
Cotton Rope.....45&2%
Hemp Rope.....45&2%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.70%
Sisal Rope Ties.....60&10%

Hammers—

Handled Hammers—

Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40@40&10&10%
Peck, Stow & Wilcox.....40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail.....33⅓&7⅛@33⅓&10&7½%
Engineers' and R. S. Hand.....50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—

Under 3 lb., per lb. 50¢.....80&10&10@85%
3 to 5 lb., per lb. 40¢.....80&10&10@85%
Over 5 lb., per lb 30¢..85@85&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—

Agricultural Tool Handles

Axe, Pick, &c.....60&5@60&10&5%
Hoe, Rake, &c......45@50&5%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50&5%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted...*gro. $2.50@$2.85*
Brad Awl.....*gro. $1.65@$1.85*
Chisel Handles:
Apple Tanged Firmer, gro. assorted.....*$2.40@$2.65*
Hickory Tanged Firmer, gro. assorted.....*$2.15@$2.40*
Apple Socket Firmer, gro. assorted.....*$1.75@$1.95*
Hickory Socket Firmer, gro. assorted.....*$1.45@$1.60*
Hickory Socket Framing, gro. assorted.....*$1.60@$1.75*
File, assorted.....*gro. $1.30@$1.40*
Hammer, Hatchet, Axe, &c. 60&10@60&10&10%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...*65@75¢*
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle....℔ gro. $0.85@$1.50

Hangers—

NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Barn Door, New Pattern, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*	*8*
Single Doz.	*$0.90*	*1.25*	*1.60*	*1.95*	*2.50*

Barn Door, New England Pattern, Check Back, Regular:

Inch	*3*	*4*	*5*	*6*
Single Doz.	*$1.30*	*1.85*	*2.50*	*3.00*

Allith Mfg. Co.:
Reliable, No. 1.....per doz. $8.00
Reliable, No. 2.....per doz. $9.60
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10&5%
Roller Bearing.....70&5%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.60&10&5%
Hinged.....net $6.10
Covered.....6.&10%
Special.....70&5%
Lawrence Bros.:
Advance.....60&10%
Cleveland.....70&5%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
Peerless.....70&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3...$2.15
Ball B'r'g St'l Track No. 10..$2.40
Roller B'r'g St'l Track No. 12..$2.30
Ball B'r'g St'l Track No. 13..$2.40
Roller B'r'g St'l Track No. 14..$2.30
Hero, Adj. Track No. 19.....50%
Adjustable Track Tandem Trolley Track No. 16.....50%
Seal, Steel Track No. 8.....$2.40
Auto Adj. Track No. 22..40&10%
Trolley B. D. No. 17.....$1.40
Trolley F. D. No. 120.....$2.35
Trolley F. D. No. 121.....$2.45
Trolley F. D. No. 150.....$2.60
Safety Underwriters F. D. No. 101.....$2.25
Tandem No. 44.....70&5%
Trolley F. D. No. 151.....$3.00
Palace, Adjustable Track No. 132.....40&10%
Royal, Adjustable Track No. 122.....40&10%
Ives' Wood Track No. 1.....$2.15
Trolley B. D. No. 20.....$1.35
Trolley B. D. No. 24.....$1.45
Trolley B. D. No. 27.....$1.50
Trolley B. D. No. 28.....$1.66
Roller Bearings Nos. 39, 40, 41, 43, 44.....70&5%
Anti-friction No. 42.....60&10%
Hinged Tandem No. 48.....60%
Folding Door B. B. Swivel No. 135.....30%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Freight Car Door.....60%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic.....60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....50&10%
Railroad.....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle.....70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis Fry Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing...60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet.....50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 122..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge, Ball Bearing.....40%
For Track, see Rail.

Extra 5@10% often given.

Hangers— Garment—

Pullman Trouser, No. 1....℔ gro. $9.00
Pullman Trouser, No. 4....℔ gro. $24.00
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Hasps—

McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—

Regular list, first quality.40&7½%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7½, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70@75%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11 and 13..75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55.....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5....75&10&5%
Tip Pat'n, Nos. 1, 3 & 5...75&10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 105.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'es	*$2.00*	*2.70*	*5.00*
Hinges only	*1.40*	*2.05*	*3.80*
Latches only	*.70*	*.70*	*.35*

New England:
With Latch.....*doz.*...*@$2.00*
Without Latch...*doz.*...*@$1.60*
Reversible Self-Closing:
With Latch.....*doz.*...*@$1.75*
Without Latch...*doz.*...*@$1.35*
Western:
With Latch.....*doz. $1.75*
Without Latch.....*doz. $1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

Nos.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—

Holdback Cast Iron.....*gro. $9.00@$9.50*
Non-Holdback, Cast Iron.....*gro. $8.00@$8.50*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....$9.00
Chief Ball B'r'g Floor Hinge.50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k.℔ gro. pr.$9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list December 20, 1904:

Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges.....65%
Heavy T Hinges.....60%
Extra H'y T H'g's.70&10%
Hinge Hasps.....50%
Cor. Heavy Strap..75&5%
Cor. Ex. Heavy T.70&10%
} Extra 10@10&5%

Screw Hook and Strap.
6 to 12-in...lb. 3½¢
1½ to 20 in...lb. 3¼¢
22 to 36 in...lb. 3 ¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6 ¢
⅝-inch.....lb. 7 ¢
½-inch.....lb. 9 ¢

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers....35%

Hods— Coal—

	Per doz.			
Inch	*15*	*16*	*17*	*18*
Galv. Open	*$2.50*	*2.75*	*3.00*	*3.25*
Jap. Open	*$1.90*	*2.10*	*2.25*	*2.55*
Galv. Funnel	*$3.00*	*3.30*	*3.60*	*3.90*
Jap. Funnel	*$2.45*	*2.65*	*2.85*	*3.30*

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar.....each $1.45
Steel Brick.....each $1.10

Hoes— Eye—

Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....35%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'ning Shuffle Hoe, ℔doz.$4.85

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ℔ doz. $24.00.....45&10%

Door—

Empire.....50%
Bardsley's.....45%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Hooks—Cast Iron—

Bird Cage, Reading.....60%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List.....50&10&10%
Clothes Line, Reading List....60&10%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....60%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—

Belt.....80&10@..%
Wire C. & H. Hooks:.....
75&10@75&10&5%
Atlas, Coat and Hat:
Single Cases.....75%
10 Case Lots.....75&10%
Columbian Hdw. Co., Gem.....60&10%
Parker Wire Goods Co., King..75&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....70&10%
Czar.....65%
V Brace.....70&10%
Czar Harness.....50&10%

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75: Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz $1.50
Grass, common grades, all sizes, per doz.....*$1.30*
Whiffletree.....*lb. 5¾@6¢*
Hooks and Eyes:
Brass.....60&10&10&10%
Malleable Iron.....70&10@75%
Covert Mfg. Co. Gate and Scuttle Hooks.....35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....*ft. 5 @ 6 ¢*
3-ply Standard.....*ft. 8 @ 9 ¢*
4-ply Standard.....*ft. 10 @11 ¢*
3-ply extra.....*ft. 11 @13 ¢*
4-ply extra.....*ft. 14 @16 ¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8 @ 9 ¢*
Fair Quality.....*ft. 10 @11 ¢*

Irons— Sad—

From 4 to 10.....*lb. 2¾@3 ¢*
B. B. Sad Irons.....*lb. 3¼@3½ ¢*
Chinese Laundry....*lb. 4¾@5 ¢*
Chinese Sad.....*lb. 4 @4¼ ¢*
Mrs. Potts', cents per set:
Nos...... *50 55 60 65*
Jap'd Tops.... *62 59 72 69*
Tin'd Tops.... *65 62 75 72*
New England Pressing.lb. 3¾@4¢

Pinking—

Pinking Irons.....*doz. 50@60¢*

Soldering—

Soldering Coppers, 2½ & 3.20@21¢
1½ & 2.....*22@23¢*

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&5%
Steel.....45&2%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&5%
Richards' Tiger Steel, No. 130.....40%

Kettles—

Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Shear & Cutlery Co.....50%

Corn—

Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....*70&10@75&10%*
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....70&10&2½%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge..per doz. $5.25@5.50
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—

Buffalo.....℔ gro. $13.00

Miscellaneous—

Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....℔ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber tip.....*gro.$1.15@1.20*
Carriage, Jap., all sizes.....
gro. 40@45¢
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....40%
Climax Shelf, No. 113.....40%
Trolley, No. 109.....40%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—

Regular Tubular, No. 0.....
doz. $4.35@4.75
Lift Tubular, No. 0..doz. $4.75@5.25
Hinge Tubular, No. 0.....
doz. $4.75@5.25
Other Styles.....*40&10@40&10&5%*

Bull's Eye Police—

No. 1, 2¾-inch.....*$2.50@2.75*
No. 2, 3-inch.....*$2.75@3.00*

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—

Roggin's Latches, with screw..
doz. 35@40¢

Door—

Richards' Bull Dog, Heavy No. 125.40%
Richards' Trump, No. 127.....50%

Leaders, Cattle—

Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.....35%

Lifters, Transom—

R. & E.....33⅓%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.20*	*2.00*	*1.65*
75 feet	*$1.80*	*1.70*	*1.30*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Anniston Waterproof Clothes, 50 ft., ℔ gro., $24.00; Gilt Edge, $22.00; Air Line, $22.00; Acme, $17.00; Alabama, $15.00; Empire, $14.00; Advance, $13.50; Oriole, $20.00; Albemarle, $13.50; Eclipse, $12.50; Chicago, $11.00; Standard, $10.00; Columbia, $8.50; Allston, $12.50; Calhoun, $11.00.

Locks— Cabinet—

Cabinet Locks..*33⅓@33⅓&7½%*

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....45&20%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—

Stowell's.....50%

Padlocks—

Wrought Iron....*75&10&5@80&5%*
R. & E. Mfg. Co. Wrought Steel and Brass.....75@75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....60%

Machines—Boring—

Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Without Augers.
R. & E. Mfg. Co.: Upright. Angular.
Improved No. 3..$4.25 No. 1..$5.00
Improved No. 4.. 3.75 No. 2.. 3.38
Improved No. 5.. 2.75
Jennings' Nos. 1 and 4.....33&5%
Millers' Falls..... 5.75
Snell's, Rice's Pat. 2.50 2.75

Corking—

Reisinger Invincible Hand Power.....
℔ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—

Chandler's.....12½%

Washing—

Boss Washing Machine Co.: Per doz.
Champion Rotary Banner No. 1..$54.00
Standard Champion No. 1.....$48.00
Standard Perfection.....$26.00
Cinti Square Western.....$30.00
Uneeda American, Round.....$29.00

Mallets—

Hickory.....*45&5@50%*
Lignumvitæ.....*45&5@50%*
Tinners' Hickory and Apple-wood.....*doz. 45&5@50%*

Mangers, Stable—

Swett Iron Works.....50%

Mashers, Vegetable—

Western, W. G. Co., Potato....60&10%

Mats, Door—

Elastic Steel (W. G. Co.).....10%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....25&30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheap.....*all sizes, $1.75@2.00*
Good.....*all sizes, $2.25@2.50*

	10	*12*	*14*	*16-in.*
High Grade	*4.25*	*4.50*	*4.75*	*5.00*

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

Nails—

Wire Nails and Brads, Papered, List July 20, 1899..85&10&10@90%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	13	12	12	11	11	.....Net
New Haven	23	21	20	19	18	...40&5
Putnam	23	21	20	19	18	....35%
New Putnam	19	18	17	16	16	..10&10%
Western						℔ lb 8½¢

Jobbers' Special Brands.....
per lb. 8½@10¢

Picture—

	1½	*2*	*2½*	*3*	*3 1½ in.,*
Brass H'd.	*.45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head..	*1.10*	*1.10*	*1.10*		*.. gro*

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: *Off list.*
Mfrs. or U. S. Standard.
Square, plain.....*$4.90*
Hexagon, plain.....*$5.30*
Square, C. T. & R.....*$5.10*
Hexagon, C. T. & R.....*$5.80*
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank.....*$5.30*
Hexagon, Blank.....*$5.80*
Square, Tapped.....*$5.30*
Hexagon, Tapped.....*$5.80*

Oakum—

Best or Government.....*lb. 6½¢*
Navy.....*lb. 5 ¢*
U. S. Navy.....*lb. 6 ¢*
Plumbers' Spun Oakum.....*2½¢*
In carload lots ¼¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....*50&10%*
Tin or Steel.....*65&10%*
Zinc.....*65&10%*
Chase or Paragon:
Brass and Copper...*45&10@50%*
Tin or Steel.....*65&10%*
Zinc.....*65&10%*
Malleable, Hammers' Imp'ed, No. 1, $3.60; No. 2, $4; No. 3, $4.40. ℔ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can—

Per doz.
Sprague, Iron Handle....*30@35¢*
Sprague, Wood Handle...*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
National.....50
Stowell's Sprague.....℔ doz. 35@45¢

Egg—

Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

Packing—

Asbestos Packing, Wick and Rope.....*lb. 14@16¢*

Rubber—

(Fair quality goods.)
Sheet, C. I.....*8@10¢*
Sheet, C. O. S.....*9@13¢*
Sheet, C. B. S.....*10@11¢*
Sheet, Pure Gum.....*50@65¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ℔ lb 80¢.....25@25&5%

Miscellaneous—

American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Creamery—

S. S. & Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.60&10@60&10&12½%

Fry—

Common Lipped:
Nos..... *1 2 3 4 5*
Per doz..*$0.75 0.80 0.90 1.10 1.30*

Refrigerator, Galva.—

Inch..... *12 14 16 18*
Per doz....*$1.95 2.25 2.80 3.15*

Roasting and Baking—

Regal, S., S. & Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No. 40	50	60	140	150	160
$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper

Asbestos: *lb.*
Building Felt.....*2¾¢*
Mill Board, sheet, 40x40 in...*3½¢*
Mill Board, roll, thicker than 1-16 inch.....*3½¢*
Mill Board, 1-16 inch thick and less.....*2¼¢*
Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll.....
35¢
Medium weight, 30 lbs. to roll.....
40¢
Heavy weight, 40 lbs. to roll.....
$0@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25
Deafening Felt, 3, 6 and 4½ sq. ft. to lb. ton.....*$38.00@40.00*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—

1 ply (roll 300 sq. ft.), ton.... $32.50@35.50
2 ply, roll 108 sq. ft.....55@60¢
ply, roll 108 sq. ft.....78@85¢
Slater's Felt (roll 500 sq. ft.) .75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—

Flint Paper and Cloth .60@60&10%
Garnet Paper and Cloth....25%
Emery Paper and C'h .50&10@60%

Parers— Apple—

Advance .....℔ doz. $4.00
Baldwin .....℔ doz. $4.00
Bonanza Improved.....each $6.50
Daisy .....℔ doz. $4.00
Dandy .....each $7.50
Home a Improved.....each $20.00
Family Bay State.....℔ doz. $15.00
Improved Bay State.....℔ doz. $36.00
Little Star.....℔ doz. $5.00
New Lightning.....℔ doz. $7.00
Reading 72.....℔ doz. $3.25
Reading 78.....℔ doz. $6.25
Rocking Table.....℔ doz. $6.20
Turn Table '98.....℔ doz. $6.00
White Mountain.....℔ doz. $5.00

Potato—

Saratoga .....℔ doz. $7.00
White Mountain.....℔ doz. $6.00

Picks and Mattocks—

List Feb. 23, 1899.....70&5@75%
Cronk's Handled Garden Mattock, ℔ doz., $6.40.....33⅓%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass .....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—

Carload lots.
Standard, 2-6 in.....60%
Extra Heavy, 2-6 in.....70%
Fittings 75%

Pipe, Merchant—

Carload Lots.

	Steel. Blk.	Steel. Galv.	Iron. Blk.	Iron. Galv.
	Blk.	*Galv.*	*Blk.*	*Galv.*
⅛ & ¼ in..	68½%	52½%	66½%	50½%
⅜ & ½ in..	72½%	60½%	70½%	58½%
¾ to 6 in..	76½%	66½%	75 %	65 %
7 to 12 in..	71½%	56½%	70 %	54½%

Pipe, Sewer—

Carload lots.
Standard Pipe and Fittings, 2 to 24 in.:
New England.....71%
New York and New Jersey.75%
Maryland, Delaware, E. Pa.78%
West. Pa. and West Va...80%
Virginia 76%
Ohio, Michigan and Ky....80%
Indiana 80%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints....	$7.00	$8.00
6 in., per 100 joints....	7.50	8.50
7 in., per 100 joints....	8.50	9.50

Planes and Plane Irons—

Wood Planes—

Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding .....33⅓&10%
Bailey's (Stanley R. & L. Co.)..... 5&10@25&10&10%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's 60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union 60%

Iron Planes—

Bailey's (Stanley R. & L. Co.)..... 25&10@25&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's .....60&10%
Union 60%

Plane Irons—

Wood Bench Plane Irons..... 25&10@30%
Buck Bros.....30%
Chapin-Stephens Co.....30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co..20&10@20&10&10%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse.....℔ doz. $8.50

Plates—

Felloe .....lb. 3¾@4¼¢
Self-Sealing Pie Plates (S., S. & Co.). ℔ doz. $2.00.....50%

Pliers and Nippers—

Button Pliers.....75&10@80%
Gas Burner, per doz. 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	*7*	*8*	*10*	*12-in.*
	$2.00	*$2.25*	*$3.00*	*$3.75*

Acme Nippers.....50@50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's 60%
Improved Button.....60&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pinners and Tools.....40&10@40&10&10%
P., S. & W. Tinners' Cutting Nippers .....30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds.....40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable .....40&7½%
Stanley R. & L. Co..30&10@30&10&10%
Stanley's Duplex.....20@20&10&10%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.60; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1-lb. papers, lb. 8½@9 ¢
½-lb. papers.....lb. 9 @9½¢
¼-lb. papers.....lb. 9¾@10¼¢

Pokes, Animal—

Ft. Madison Hawkeye.....℔ doz. $3.25
Ft. Madison Western.....℔ doz. $4.00

Police Goods—

Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.). ℔ doz., $3.00; No. 2 (1 qu.), $9.72....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25; ℔ gro., $12.00.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75; ℔ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ℔ doz. $2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans, ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $1.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans, ℔ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....℔ doz. $1.00
Black Silk, 5 oz. box.....℔ doz. $0.75
Black Silk, ½ pt. liq.....℔ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. $9.00
1 qt., Round.....gro. $10.00
1½ qt., Square.....gro. $11.00
2 qt., Square.....gro. $13.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft. 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled 40%
Tinned 35%

Powder—

In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk).....	$12.00	$15.00
Half Keg (12½ lb bulk)...	6.25	7.75
Quarter Keg (6¼ lb bulk)..	3.25	4.00
Case 24 (1 lb cans bulk)..	14.00	17.00
Half case 12 (1 lb c. bk).	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Seal Presses—

Morrill's No. 1, ℔ doz., $20.00.....50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Cork—

Invincible Cork Puller.....$21.00

Pullers, Nail—

Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Pelican, ℔ doz. $9.00.....40&10%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ℔ doz. $6.00
Diamond B, No. 3, case lots..... ℔ doz. $5.50
Giant No. 1, ℔ doz. $18; No. 2, $16.50; No. 3, $15.....40%

Pulleys, Single Wheel—

Inch	*2*	*2½*	*3*
Awning, doz.	*$0.55*	*.85*	*1.15*

Hay Fork, Swivel or Solid Eye.

doz., ½ in.,	*$1.15 ;*	*5 in.,*	*$1.45*
Inch	*2*	*2¼*	*2½*
Hot House, doz..	*$0.70*	*.90*	*1.25*

Inch	*1¼*	*1½*	*1¾*	*2*
Screw, doz....	*$0.16*	*.19*	*.23*	*.30*

Inch	*1¾*	*2*	*2¼*	*2½*
Side, doz.....	*$0.30*	*.40*	*.55*	*.65*

Inch	*1½*	*1¾*	*2*	*2½*
Tackle, doz....	*$0.30*	*.42*	*.58*	*1.00*

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in. .....16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50
Grand Rapids All Steel Noiseless..50
Ideal .....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Cistern .....60@60&10%
Pitcher Spout.....80@80&€3%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list)..50&10
Barnes' Pitcher Spout.....80
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $7.20
Flint & Walling's, Fast Mail Hand, (low list).....55
Flint & Walling's Fast Mail (low list) .....55&5%
Funt & Walling's Tight Top Pitcher.80
National Specialty Mfg. Co., Measuring, $6.00.....30
Mechanical Sprayer.....$7 20
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50
Myers' Spray Pumps.....50

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch...	*2*	*2¼*	*2½*	*2¾*
	$2.20	*2.50*	*2.75*	*3.00*

Inch...	*3*	*3¼*	*3½*	*3¾*	*4*
	$3.30	*3.60*	*3.85*	*4.10*	*4.40*

Plunger Cup Leathers—Per 100:

Inch...	*2½*	*3*	*3½*	*4*
	$2.75	*3.85*	*5.00*	*6.00*

Punches—

Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality .....$1.75@2.00
Revolving (4 tubes) ..... doz. $3.50@3.75
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55
Morrill's No. 1 (A.B.C.), ℔ doz. $15.50
No. 2, ℔ doz. $22.50.....50
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40
Niagara Solid Punches.....55&10
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co.35@35&5%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....60%

Rail—Barn Door, &c.—

Cast Iron Barn Door; Flange Screw Holes for Rd. Groove Wheels:

½	⅝	¾ in.	
$1.70	*$2.10*	*$3.00*	*100 feet.*

Angular for Sq. Groove Wheels:

Small.	*Med.*	*Large.*	
$1.50	*$1.90*	*$2.60*	*100 feet.*

Sliding Door, Painted Iron.... 2½@2¾¢
Sliding Door, Wrought Brass, 1½ in., lb., 36¢ 30%
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ℔ ft. 5½¢
No. 2, Reliable Hgr. Track, ℔ ft. 7¢
Cronk's:
Double Braced Steel Rail....℔ ft. 3¢
O. N. T. Rail.....2¾¢
Griffin's:
XXX, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.70; 1¼ in., $4.40.
O. N. T., ℔ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.40.
New York, 1 x 3-16 in., ℔ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢..50%
None Better.....℔ ft. 3¾¢
Standard .....℔ ft. 4 ¢
Myers' Stayon Track.....60%
Richards' Mfg. Co.:
Common 1 x 3-16 in., $2.75; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail.....$4.40
Fire Door Track, ℔ ft., 2¼ x ⅝, 15¢; 3½ x ⅝, 9¢.
Lag Screw Rail, No. 65.....40%
Gauge Trolley Track, ℔ ft., No. 31, 10¢; No. 32, 15¢; No. 33, 24¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard 60%
Stowell's:
Cast Rail.....℔ ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....℔ ft. 3¢
Wrought Bracket, 1½ x 5-16..℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢.....60%
P. L. B. Steel Rail.....℔ 100 ft. $3.00
No. 0 1 x 3-16.....℔ 100 ft. $2.75

Rakes—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ℔ doz., net.....$4.25
Cronk's:
New Champion Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00....75&25%
Queen City Lawn, ℔ doz., 20 teeth, $3.45; 24, $3.60.....
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....℔ doz. $3.45
Lawn Queen, 24-tooth.....℔ doz. $3.60
Paragon, 20-tooth.....℔ doz. $2.75
Paragon, 24-tooth.....℔ doz. $3.00
Steel Garden, 14-tooth....℔ doz. $2.88
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—

Disston's 75%
Heller Bros.'.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—

Borasic 60%
Fox Razors, No. 42...℔ doz. $20.00 } 40% Dis.
Fox Razors, No. 44...℔ doz. $20.00 } 40% Dis.
Fox Razors, No. 82, Platina... ℔ doz. $25.00 } 40% Dis.
Red Devil.....60%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Silberstein 40%

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 6 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*

Black Jap.....75%
Bronzed 75%

Revolvers—

Single Action.....95¢@$1.00
Double Action, except 44 cal..$1.85
Double Action, 44 caliber....$2.00
Automatic $3.45
Hammerless $4.00
NOTE.—Jobbers frequently cut the above prices of manufacturers for small trade.

Riddles, Hardware Grade

16 in.....per doz. $2.25@$2.50
17 in.....per doz. $2.50@$2.75
18 in.....per doz. $2.75@$3.00

Rings and Ringers—

Bull Rings—

	2	*2½*	*3 inch.*
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.00*	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ℔ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... doz. 50@55¢
Hill's Ringers, Malleable Iron.. doz. 70@75¢
Blair's Rings...per gro.$4.75@5.25
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—

Copper .....50&10@60%
Iron or Steel.....75@75&5%

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60
Cronk's Stay.....72½
Cronk's Brinkerhoff.....90¢
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.50%
O. K. Adj. and Reversible No. 58.50%
Lag Screw, Nos. 55 and 57.....50%
Fire Door, No. 59.....40
Favorite, No. 54.....40
Stowell's Barn Door Stay..℔ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....℔ doz. 65¢
Hinge Adjustable Stay.....℔ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger:
Pure .....lb..13¾@12¢
Sisal, 7-16 in. diam. and larger:
Mixed .....lb..8@8¼¢
Pure .....lb..9½@9¾¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed .....lb. 8@8¼¢
Pure .....lb..9½@9¾¢

Sisal, Tarred, Medium Lath Yarn:
Mixed .....lb. 7½¢
Pure .....lb. 9@9½¢
Cotton Rope: Lb.
Best, ¼-in. and larger....16½¢
Medium, ¼-in. and larger.14½¢
Common, ¼-in. and larger.10½¢
Jute Rope:
Thread No. 1, ¼-in. & up. lb. 6½¢
*Thread No. 2, ¼-in. & up, lb.*5½¢
Old Colony Manila Transmission Rope .....₱ lb 17½¢

Wire Rope—

Galvanized .....42½&2½%
Plain .....50&2½%

Ropes & Hammocks—

Covert Mfg. Co.:
Jute .....50&5%
Sisal .....35&5%
Covert Saddlery Works.....60&5%

Rules—

Boxwood .....60&10&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60@60&10%
Ivory .....35@35&10&10%
Miscellaneous .....50@50&10&10%
Combination .....55@55&10%
Stationers' .....10@10&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60%
Stanley R. & L. Co.:
Boxwood .....60@60&10%
Ivory .....35@35&10&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—

See *Balance, Sash.*

Sash Locks—

See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 50%
Band .....50&10@60
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&5%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide.....60%
Band, ¼ to 1⅝.....60%
Crosscuts 50%
Narrow Crosscuts.....55%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws.....30%
Hand Saws.....20&2½%
Wood Saw Blades.....35%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@60%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades.....25%
Keystone 40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best...25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades.....35%
Sterling Hack Saw Frames....30&10&5%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—

Covert's Saddlery Works.....60&10%

Scales—

Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to ¼ lbs. .....*doz. $5.50*
Two Platforms, ½ oz. to 8 lbs. .....*doz. $16.00*
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2.....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list).25@35%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.50%

Scrapers—

Box, 1 Handle.....*doz. $2.00@2.25*
Box, 2 Handle.....*doz. $2.60@2.85*
Ship....*Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....30@30&10%
Chapin-Stephens Co., Box....50@50&10%

Screens, Window and Frames—

Flyer Pattern Screens..60&5@60&5&2½%
Maine Screen Frames.....40&10&5%
Perfection Screens.....6.&5@60&5&2½%
Phillips' Screen Frames.60&5@60&5&2½%
See also *Doors.*

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼.$3.50@3.75
Bench, W'd, Beech.doz. 30@30&5%
Hand, Wood.....*30@30&5%*
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—

Lag, Cone Point, list Oct. 1, '99 .....*75&20%*
Coach, Gimlet Point, list Oct. 1, '99.....*75&15%*
Hand Rail, list Jan. 1, '81....*70&10@75%*

Jack Screws—

Standard List.....75&10@80&5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50@50&5%
Sargent .....70&10%
Swett Iron Works.....75&10@80&5%

Machine—

List Jan. 1, '98:
Flat or Round Head, Iron....*50@50&10%*
Flat or Round Head, Brass....*50@50&10%*

Set and Cap—

Set (Iron or Steel).80@80&10&10%
Sq. Hd. Cap.....*75@75&10%*
Hex. Hd. Cap.....*75@75&10%*
Rd. or Fillister Hd. Cap.....*65@65&10%*

Wood—

List July 23, 1903.
Manufacturers' printed discounts:
Flat Head, Iron.....*87½@10@..%*
Round Head, Iron...*85 &10@..%*
Flat Head, Brass....*85 &10@..%*
Round Head, Brass..80 &10@..%
Flat Head, Bronze...*77½&10@..%*
Round Head, Bronze.75 &10@..%
Drive Screws.....*87½&10%*

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.
Prices announced for next season:
Clipper Pattern, Grass.....*$6.20*
Full Polished, Clipper.....*$6.75*
Grain *$8.00*
Clipper, Grain.....*$8.25*
Weed and Bush.....*$6.25*

Seeders, Raisin—

Enterprise .....25&30%

Sets—Awl and Tool—

Brad Awl and Tool Sets:
Wood Handle, 10 Awls.....*doz. $2.00@2.25*
Wood Handle, 14 Awls, 6 Tools.....*doz. $2.50@2.60*
Aiken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 .....30@30&10&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel.....₱ doz sets $9.00

Nail—

Square .....*per gro. $2.25@2.50*
Round, Blk. and Pol., assorted. gro. $1.80@2.00
Octagon .....*gro. $3.50@3.75*
Buck Bros.....27½%
Cannon's Diamond Point, ₱ gro. $12..25%
Mayhew's .....₱ gro. $9.00
Snell's Cannon's Diamond Point.....₱ gro. $7.20
Snell's Cor'gated, Cup Pt...₱ gro. $7.20
Snell's Knurled, Cup Pt...₱ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt.₱ gro. $7.50

Rivet—

Regular list.....*75@75&10%*

Saw—

Aiken's:
Genuine .....50&10%
Imitation .....50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut.....30%
Plate 20%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.63....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.63.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal, Cross Cut.....₱ doz. $8.50
Royal, Hand.....₱ doz. $5.00
Taintor Positive.....₱ doz. $6.75

Shaving—

Fox Shaving Sets, No. 30.....₱ doz., net, $24.00

Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%

Shaves, Spoke—

Iron .....*doz. $1.00@1.15*
Wood .....*doz. $1.75@2.00*
Bailey's (Stanley R. & L. Co.).....30@30&10&10%
Chapin-Stephens Co.....30@30&10&10%
Goodell's ₱ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—

Cast Iron..	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fair quality, Nickel..75@75&10%
Tailors' Shears.....*40@40&10%*
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
Wilkinson's Hedge, 1900 list.....45%
Wilkinson's Branch, Lawn & Border.40%
Wilkinson's Sheep, 1900 list.....50%

Tinners' Snips—

Steel Blades.....*20&5@20&10%*
Steel Laid Blades....*40&10@50%*
Forged Handles, Steel Blades, Berlin, 40@40&10%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in.....50%
Niagara Snips.....40%
P., S. & W. Co.....20%

Pruning Shears and Tools

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25%
Disston's Pruning Hook, ₱ doz. $12.00.....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades..40@40&5%
Orange Shears.....50&10@50&20%
Grape .....40&10&10%
Tree Pruners.....75%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller, Hatfield's, Sargent's list .....70&10%
Reading 60%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—

Reading list.....45&20%
R. & E. list.....33⅓%
Sargent's list.....50&10%

Shells—Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge .....65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge.25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge..20%
Climax, Union, League, New Rival, 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....30&10%

Shells, Loaded—

Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade.....*40&5%*
Loaded with Smokeless Powder, high grade.....*40&10&10%*
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron .....per keg *$4.00*
Steel .....per keg *$3.75*
Burden's, all sizes.....₱ keg $3.90

Shot—

Drop, up to B, 25-lb. bag....*$1.65*
Drop, B and larger.....*per 25-lb. bag, $1.90*
Buck, 25-lb. bag.....*$1.90*
Chilled, 25-lb. bag.....*$1.90*

Shovels and Spades—

Association List, Nov. 15, 1902..40%

Sieves and Sifters—

Hunter's Imitation.....*gro. $10.50@11.00*
Hunter's Genuine.....*per gro. $12.00@12.50*
Buffalo Metallic Blued, S. S. Co., ₱ gr.:

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ₱ doz.. $2.00.....20%

Sieves, Seamless Metallic

	Per dozen.			
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....*doz. $0.90@0.95*
Mesh 20, Nested....*doz. $1.00@1.05*
Mesh 24, Nested....*doz. $1.30@1.40*

Sinks, Cast Iron—

Standard list.....*60@60&10%*
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron.....*80&10@80&10&10%*
Steel .....*40@40&10%*

Slates, School—

Factory Shipments.
"D" Slates.....*50@50&10%*
Eureka, Unexcelled Noiseless....*60&5 tens*
Victor A, Noiseless.....*60&¼ tens &5%*

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German .....*40@40&10%*
Covert Mfg. Co.:
Derby .....30&5&2%
High Grade.....45
Jockey .....30&10
Trojan 45
Yankee .....30&5&2%
Yankee Roller.....30&5&2%
Covert's Saddlery Works:
Crown 60
German 60
Model 60
Triumph 60%
Oneida Community:
Solid Swivel.....60
Sargent's Patent Guarded....66⅔&&10%

Snaths—

Scythe *50%*

Snips, Tinners—See *Shears.*

Spoons and Forks—Silver Plated—

Good Quality.....*50&10@60&5%*
Cheap .....*60@60&10%*
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton .....40&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60
Wm. Rogers & Son.....60&10%

Miscellaneous—

German Silver.....*60@60&5%*
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—

Teas .....*per gro. 45@50¢*
Tables .....*per gro. $0.90@$1.00*

Springs—Door—

Chicago (Coil).....40&10
Gem (Coil).....20
Pullman (Coil).....20
Reliance (Coil).....40&10
Star (Coil).....30
Torrey's Rod, 39 in.....₱ doz. $1.10
Victor (Coil).....50&10&10

Carriage, Wagon, &c.—

1¼ in. and Wider: *Per lb*
Black .....*4@4¼¢*
Half Bright.....*4@4¼¢*
Bright .....*4½@4¾¢*
Painted Seat Springs:
1½ x 2 x 26.....*per pr. 42¢*
1½ x 3 x 28.....*per pr. 70¢*

Sprinklers, Lawn—

Enterprise .....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron. } 75@75&5%
Rosewood Hdl. Try Square and T-Bevels.....*60&10&10@70%*
Iron Hdl. Try Squares and T-Bevels.....*40&10@40&10&10%*
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter.....40&10@40&10&10%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....*doz. $1.00*
Good Grade.....*doz. $1.25*
Tinned Iron.....*doz. $0.75@1.25*
Iron, Porcelain Lined...*doz. $1.75*

Staples—

Barbed Blind.....*lb. 6@6½¢*
Electricians', Association list..*80&10&10&10%*
Fence Staples, Plain, $2.25; Galvanized *$2.55*
Poultry Netting Staples.....*per lb. 3¼@3½¢*
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—

Dick's 30%
Foster Bros.'.....30%
C. & A. Hoffmann's.....40%

Steelyards—....30@30&10%

Stocks and Dies—

Blacksmiths'.....*50@50&10%*
Curtis Rev'bie Ratchet Die Stock..25%
Derby Screw Plates.....25%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stone—Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ₱ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots.....₱ gro. $9.00
One gross or more.....₱ gro. $7.20
Lots of 10 gross or more..₱ gro. $6.00

Pike Mfg. Co., 1901 list:
Black Diamond S. S..@ gro. $12.00
Lamoille S. S.....@ gro. $11.00
White Mountain S. S.@ gro. $9.00
Green Mountain S. S..@ gro. $6.00
Extra Indian Pond S.S.@ gro. $7.50
No. 1 Indian Pond S.S.@ gro. $7.00
No. 2 Indian Pond S.S.@ gro. $4.50
Leader Red End S. S.@ gro. $4.50
Emery and Corundum, 10 in., @ gro. $9.00 — 33⅓%
Pure Corundum, 10 in., @ gro. $12
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%

Oil Stones, &c.—

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit..50%
Gem Corundum Axe, Single or Double Grit.....55%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones....50%
Pike Mfg. Co., 1901 list: @ lb.
Arkansas St. No. 1, 3 to 5½ in..$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in.30¢ — 33⅓%
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%
Hindostan No. 1, R'g'lar.@ lb 8¢
Hindostan No. 1, Small..@ lb 10¢
Axe Stones (all kinds).....
Turkey Oil Stones, Extra, 5 to 8 in.....@ lb 80¢ — 33⅓%
Queer Creek Stones, 4 to 8 in.20¢
Queer Creek Slips.....40¢
Sand Stone.....6¢
Belgian, German and Swaty Razor Hones 50%
Natural Grit Carving Knife Hones .....@ doz. $3.00
Quick Edge Pocket Knife Hones .....@ doz. $2.50 — 40%
Mounted Kitchen Sand Stone, @ doz. $1.50

Stoners, Cherry—

Enterprise .....25@30%

Stoppers, Bottle—

Victor Bottle Stoppers.....@ gro. $9.00

Stops— Bench—

Millers Falls.....15&10%
Morrill's, @ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%

Door—

Chapin-Stephens Co.....60@60&10%

Plane—

Chapin-Stephens Co.....20%

Straps— Box—

Cary's Universal, case lots..20&10&10%

Hame—

Covert's Saddlery Works.....60&10%

Stretchers, Carpet—

Cast Iron, St'l Points.doz. 55@60%
Socket .....doz. $1.75
Excelsior Stretcher and Tack Hammer Combined, @ doz. $6.00.....20%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%

Sweepers, Carpet—

National Sweeper Co.: @ doz.
Auditorium, Roller Bearing (26 in. case), Nickel.....$54.00
Mammoth, Roller Bearing (30 in. case), Nickel.....$60.00
Marion, Roller Bearing, regular finishes, full Nickel.....$24.00
Marion Queen, Roller Bearing, full Nickel $24.00
Monarch, Roller Bearing, N'kel.$22.00
Monarch, Roller B'r'g, Jap'ned.$20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel.....$36.00
Monarch Extra, Roller Bearing, (17-in. case), Nickel.....$36.00
Monarch Extra, Roller Bearing (17-in. case), Japanned.....$33.00
National Queen, Fancy Veneers.$27.00
Perpetual, Regular B'r'gs, Nkl..$20.00
Perpetual, Regular B'r'gs, Jap.$18.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks.....90¢&30¢&10@..%
American Cut Tacks..90¢&25@..%
Swedes Cut Tacks.90¢&30¢&10¢5@..%
Swedes Upholsterers' Tacks.... 90¢&45¢&10¢5@..%
Gimp Tacks.....90¢&45¢&10@..%
Lace Tacks.....90¢&45¢&10@..%
Trimmers' Tacks.90¢&30¢&10¢5@..%
Looking Glass Tacks.70¢&10¢5@..%
Bill Posters' and Railroad Tacks .....90¢&45¢&10@..%
Hungarian Nails....80¢&30¢&5@..%
Common and Patent Brads.... 80¢&10¢5@..%
Trunk and Clout Nails..80¢&10@..%

NOTE.—The above prices are for Straight Weights. An extra 5% is given on Star Weights** and an extra 10¢&5% on Standard Weights.****

Miscellaneous—

Double Pointed Tacks..... 90¢&6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list .....50&10@60%
See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, S., S. & Co.....30-gal.	$3.40
Emerald, S., S. & Co.....60-gal.	$4.25
Queen City, S., S. & Co....30-gal.	$3.65
Queen City, S., S. & Co....60-gal.	$4.50

Tapes, Measuring—

American Asses' Skin..40¢&10@50%
Patent Leather.....25@30¢5%
Steel .....40@40¢&10%
Chesterman's .....25@25¢5%
Eddy Asses' Skin.....40&10@50%
Eddy Patent Leather.....25@30&5%
Eddy Steel.....40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list..... 35@35&5%
Pocket .....35@35&5%
Lufkin's:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather....25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $3.00

Thermometers—

Tin Case.....80¢&10@80¢&10¢5%

Ties, Bale—Steel Wire—

Single Loop.....80¢&2½%
Monitor, Cross Head, &c....70%

Brick Ties—

Niagara Brick Ties.....25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Hay—

Myers' Hay Tools.....50%
Stowell's Hay Carriers.....50%
Stowell's Hay Forks.....50%
Stowell's Fork Pulleys.....50%

Saw—

Atkins' Cross Cut Saw Tools.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Oneida Pattern...75¢&10@75¢&10¢5%
Newhouse .....45@45&5%
Hawley & Norton.....65%
Victor and Oneida.....70&10@70&10&5%
O. C. Jump (Blake Pat.)..6à&5@60&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; @ doz. $13.25
No. 3, Rat, @ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, @ doz. $5.25; case of 72 @ gro. $4.70 doz.
No. 4, Mouse, @ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, @ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E I.....50%

Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....35%
Kohler's Steel Garden Trowels, 5 in. @ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. @ gro. $6.00
Never-Break Steel Garden Trowels.. @ gro. $6.00
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....@ doz. $16.00
Grocery .....@ doz. $15.00
Daisy Stove Trucks, Improved Pattern .....@ doz. $18.50
McKinney Trucks.....each $10.00
Model Stove Trucks.....@ doz. $18.50

Tubs, Wash—*No. 1 2 3*

Galvanized, per doz. $4.75 5.25 6.00
Galvanized Wash Tubs (S., S. & Co.):
No. 1 2 3 10 20 30
Per doz., net.$5.70 6.30 7.20 6.60 7.20 8.10

Twine, Miscellaneous—

Flax Twine: BC. B.
No. 9, ⅛ and ⅙-lb. Balls..22@24¢
No. 12, ⅛ and ⅙-lb. Balls..18@20¢
No. 18, ⅛ and ⅙-lb. Balls..16@18¢
No. 24, ⅛ and ⅙-lb. Balls..16@18¢
No. 36, ⅛ and ⅙-lb. Balls..15@17¢
Chalk Line, Cotton ½-lb. Balls .....30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....9½@11¢
Cotton Wrapping, 5 Balls to lb., according to quality...13½@20¢
American 2-Ply Hemp, ¼ and ½-lb. Balls.....13@14¢
American 3-Ply Hemp, 1-lb. Balls .....13@14¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....8¢
India 3-Ply Hemp, 1-lb. Balls.. 7@8¢
India 3-Ply Hemp, 1½-lb. Balls. 6@7¢
2, 3, ½ and 5-Ply Jute, ½-lb. Balls .....9@10¢
Mason Line, Linen, ½-lb. Bls..46¢
No. 26½ Mattress, ¼ and ½-lb. Balls .....37¢
Wool, 3 to 6 ply....B 4¾¢; A 5¢

Vises—

Solid Box.....60¢&10@60¢&10¢10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard 40%
Amateur 25%
Columbian Hdw. Co.....40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50; No. 3, $10.00.
Machinist and Tool Makers' No. 4, $12.50; No. 5, $7.00; No. 6, $10.00; No. 10, $21.50.
Jewelers' No. 7.....$4.00
Fisher & Norris Double Screw..15&10%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.....20@30%
Merrill's 20%
Millers Falls.....60&10%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip.....20%
Parker's:
Victor .....20@25%
Regulars .....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Sargent's 40%
Smith & Hemenway Co.:
Machinists' 40%
Jewelers' 33⅓%
Snediker's X. L.....33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, @ doz. $30.....25%
Perfection Saw Clamps, @ doz....$5.00
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip.....15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise .....60&10%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—*Price per M.*

B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....$1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Dis. 15%

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled .....50¢&55¢&10%
Ground .....55¢@60¢&10%
Plain or Unground..60¢@65¢&10%
Country Hollow Ware, per 100 lbs. .....$2.75@3.00
White Enameled Ware:
Maslin Kettles.....70%
Covered Wares
Tinned and Turned.....40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....50&20%
Agate Nickel Steel Ware, Specials.. 60&15%
Iron Clad Ware.....70&10%
Lava, Enameled.....40&10%
Never Break Enameled.....50%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles.....60%
Porcelained .....50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles.....60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles.....60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: @ doz.
Crescent, family size, bent frame.$3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.90
Cable Cross, family size, stationary protector.....$3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back.....$2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back.....$3.25

Washers—Leather, Axle—

Solid .....80¢&10@80¢&10¢10%
Patent .....90¢@90¢&5%
Coil: ⅞ 1 1⅛ 1¼ Inch.
10¢ 11¢ 12¢ 13¢ per box

Iron or Steel—

Size bolt.... 5-16 ⅝ ½ ⅝ ¾
Washers ...$4.95 4.05 2.75 2.55 2.35
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... per lb. 1¾@2¢

Wedges—

Oil Finish.....lb. 2.15@2.30¢

Weights—Hitching—

Covert Mfg. Co.....40&2%
Covert's Saddlery Works.....60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District..... $25.00
Southern Territory..$19.00@20.00
Western and Central Districts .....$20.00@21.00

Wheels, Well—

8-in., $1.50@1.55; 10-in., $1.65@ 1.70; 12-in., $2.25@2.35; 14-in., $3.40@3.50.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....80¢&5@80¢&7½%
10 to 18.....80@80¢&5%
19 to 26.....80¢&10@80¢&10¢5%
27 to 36.....80¢&5@80¢&10%
Galvanized:
6 to 9.....77½@77½¢&5%
10 to 14.....72½@72½¢&5%
15 to 16.....75¢&7½@75¢&10¢2½%
19 to 26.....75¢&5@75¢&10%
27 to 36.....72½¢&5@72¢&7½%
Coppered:
6 to 9.....77½@77½¢&5%
10 to 14.....77½@77½¢&7½%
15 to 18.....75¢&10@75¢&10¢2½%
19 to 26.....75¢&10¢&5@80%
27 to 36.....75@75¢&5%
Tinned:
6 to 14.....77½@77½¢&7½%
15 to 18.....75¢&5@75¢&10%
Annealed, Steel and Tinned, on Spools ..70¢&10¢&10@70¢&10¢&10¢10%
Brass and Copper on Spools... 60¢&10@60¢&10¢&10%
Brass, list Feb. 26, '96.....30¢&5%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, 1903..90¢&10¢&10¢&10@..%

Wire Cloth and Netting—

Galvanized Wire Netting..... 80¢&15@80¢&17½%
Painted Screen Cloth, 100 ft., $1.20
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft..3 ¢
Nos. 4 and 5 Mesh, sq. ft..3¼¢
No. 6 Mesh, sq. ft.....3½¢
No. 8 Mesh, sq. ft.....4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural ....75¢&10@75¢&10¢10%
Alligator or Crocodile..70¢&10@75%
Baxter Pattern S Wrenches... 70¢&5¢&10@70%
Drop Forged S.....45@45¢&5%
Acme .....60&10%
Alligator Pattern.....70%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....40%
Adjustable S Pipe.....40%
Bemis Pipe.....60%
Briggs Pattern.....40%
Combination Black.....40&5%
Combination Bright.....40%
Merrick Pattern.....50%
Boardman's 33⅓%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle .....50&10%
Elgin Wrenches.....40%
Elgin Monkey Wrench Pipe Jaws.33⅓%
Gem Pocket.....30%
Hercules 70%
W. & B. Machinist:
Case lots.....50&5%
Less than case lots.....50%
Improved Pipe (W. & B.).....60%
Solid Handles, P., S. & W..50@50&5%
Stillson 65%
Vulcan Chain.....50%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92.....90@90¢&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed..70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters'.....list net

Zinc—

Sheet.....per 100 lbs. $7.75@8.00

CURRENT METAL PRICES.

FEBRUARY 1, 1905.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:	
1 to 1⅝ in. round and square	₩ lb 1.95¢
1½ to 4 in. x ⅜ to 1 in.	₩ lb 1.95¢
1½ to 4 in. x ¼ to 5-16	₩ lb 2.15¢
Rod—⅜ and 11-16 round and square	₩ lb 2.15¢
Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.10¢
3 in. x 3 16 in. and ⅛ in.	2.35¢
1½ to 2½ in. x ¼ in.	2.10¢
1½ to 2¾ in. x 3-16 in. and thicker	2.10¢
1 to 1¼ in. x 3-16 in.	2.15¢
1 to 1¼ x ⅛ in.	2.20¢
⅞ x ¼ in.	2.35¢
⅝ x ¼ in.	2.45¢
⅝ x ¼ in.	3.50¢
½ x 3-32 in.	4.00¢
Tees:	
1 in.	2.55¢
1¼ in.	2.35¢
1½ to 2½ in.	2.30¢
3 in. and larger	2.30¢
Beams	2.10¢
Channels, 3 in. and larger	2.10¢
Bands—1½ to 6 x 3-16 to No. 8	2.20¢
"Burden's Best" Iron, base price	3.05¢
Burden's "H. B. & S." Iron, base price	2.85¢
"Ulster"	3.10¢
Norway Bars	3.30¢
Norway Shapes	3.80¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7¢

Sheet Iron from Store—

Black.

	One Pass, C.R. Soft Steel.	R. G. Cleaned.
No. 14	₩ lb 2.50	2.60¢
Nos. 18 to 21	₩ lb 2.65	2.80¢
No. 27	₩ lb 2.80	3.10¢
No. 28	₩ lb 2.90	3.20¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 11½@14¢
Patent Planished	₩ lb A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16	₩ lb, 2.95¢
Nos. 22 to 24	₩ lb, 3.35¢
No. 27	₩ lb, 3.80¢
No. 28	₩ lb, 4.05¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

METALS—

Tin—

Straits Pig	₩ lb 30½@30½¢

Tin Plates—

American Charcoal Plates (per box.)

Calland Grade:	
IC, 14 x 20	$6.45
IX, 14 x 20	7 95
Melyn Grade:	
IC, 14 x 20	5.95
IX, 14 x 20	7.20
Allaway Grade:	
IC, 14 x 20	5.20
IX, 14 x 20	6.30

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 lb	$4.30
IX, 14 x 20	5.30

American Terne Plates—

IC, 20 x 28	$8.50
IX, 20 x 28	10.50

Copper—

Lake Ingot	₩ lb 16 @16¼¢
Casting	₩ lb 15½@15¾¢
Sheet Copper Hot Rolled, 16 oz.	₩ lb. 19¢
" " 14 "	" " 20¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ..... ₩ lb 23¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.

Seamless Brass Tubes—

Stubs' W. G.	Net. ¼	5-16	⅜	7-16	½	9-16	Outside Diameter. ⅝	¾	⅞	1	1¼	1½
4-11	..	..	..	..	..	..	..	..	..	18	18	18
12	..	..	..	..	..	..	24	24	23	23	18	18
13	..	..	..	..	..	..	25	25	23	23	18	18
14	..	..	..	..	25	25	25	23	23	23	19	19
15	..	..	..	26	25	25	25	23	23	23	19	19
16	..	..	26	26	25	25	25	23	23	24	20	20
17	..	29	26	26	25	25	25	23	23	23	21	21
18	49	31	27	27	26	26	26	24	24	24	22	22
19	58	31	27	27	26	26	26	24	24	24	23	23
20	60	31	27	27	26	26	26	24	24	24	24	24
21	62	47	29	28	28	26	25	25	25	25	25	25
22	67	52	31	31	29	29	27	26	26	26	26	26
23	72	57	33	33	31	31	29	29	29	29	29	29
24	77	62	49	44	42	41	40	39	37	36	36	37
25	82	67	52	47	45	43	42	41	40	40	41	42

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	23	25	27	28¢ ₩ lb

Brazed Brass Tubing.

Discount from List June 6, 1898, 25%.
Bronze and Copper Tubing advance on Brass List 3%

Roll and Sheet Brass—

Discount from List June 6, 1898, 25%.

Spelter—

Western	₩ lb 6½@7¢

Zinc.

No. 9, base, casks, ₩ lb 7¼¢ | Open	₩ lb 8¢

Lead.

American Pig	₩ lb 4¾@5 ¢
Bar	₩ lb 5⅜@5¾¢

Old Lead in exchange, 4¢ ₩ lb

Solder.

½ & ½, guaranteed	₩ lb 19½@20¢
No. 1	₩ lb 17½@18¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ lb 9¼@9½¢
U. S.	8¼@8½¢
Hungarian	8 @8¼¢

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

Small lots	₩ lb 37¢
100-lb lots	₩ lb 35¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 13 ¢
Light and Tinned Copper	₩ lb 12 ¢
Heavy Brass	₩ lb 8 ¢
Light Brass	₩ lb 7 ¢
Lead	₩ lb 4½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 4¼¢
No. 1 Pewter	₩ lb 19 ¢
No. 2 Pewter	₩ lb 8½¢
Pure Aluminum, Sheet	₩ lb 21 ¢
Cast Aluminum	₩ lb 16 ¢
Tin Plate Scrap	₩ ton $.....@ 5.00
Wrought Scrap Iron	₩ gross ton $14.00@14.50
Heavy Cast Scrap	₩ gross ton $12.00@12.50
Stove Plate Scrap	₩ gross ton $10.00@10.50
Burnt Iron	₩ gross ton $6.50@ 7.00

The Metal Worker

Plumber and Steam Fitter

PUBLISHED EVERY SATURDAY MORNING

Established 1874

REPRESENTING THE

STEAM and HOT WATER HEATING
PLUMBING, SHEET METAL
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